



WESTELL

WIRE SPEED

DUAL CONNECT NAT ROUTER (MODEL 2100)

USER GUIDE

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1. PRODUCT DESCRIPTION

Westell's WireSpeed™ Dual Connect NAT Router adds reliable, high-speed, Internet access to your existing home or office phone line. Your ADSL connection is "always-on" ending the hassles of dial-up modems and busy signals. Installation is easy ... no tools ... no headaches. Simply connect the hardware, apply power, and perform the simple software configuration for your Dual Connect Router.

This Router is capable of data rates hundreds of times faster than a traditional analog modem. But unlike analog modems, Westell's WireSpeed™ Dual Connect NAT Router allows you to use the same phone line for simultaneous voice/fax communications and high-speed Internet access, eliminating the need for dedicated phone lines for voice and data needs. The Plug and Play feature means that no user configuration is required.

NOTE: Hereafter, the Westell® WireSpeed™ Dual Connect NAT Router will be referred to as "Dual Connect Router" or "Router."

2. SAFETY INSTRUCTIONS

Never install any telephone wiring during a lightning storm.

Never install telephone jacks in wet locations unless the jack is specifically designed for wet locations.

Never touch non-insulated telephone wires or terminals unless the telephone line has been disconnected at the network interface.

Use caution when installing or modifying telephone lines.



WARNING



Risk of electric shock. Voltages up to 140 Vdc (with reference to ground) may be present on telecommunications circuits.

3. REGULATORY INFORMATION

3.1 FCC Compliance Note

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the Federal Communication Commission (FCC) Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy, and if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment OFF and ON, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and the receiver.
- Connect the equipment to a different circuit from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

PART 68 - COMPLIANCE REGISTRATION

This equipment (Dual Connect Router) complies with Part 68 of the FCC rules and the requirements adopted by the ACTA. A label on the bottom of this equipment contains, among other information, the Ringer Equivalence Number (REN) and the product identifier. For products approved after July 23, 2001 the product identifier is in the format US:AAAEQ##TXXXX. The digits represented by ## are the REN without a decimal point (e.g. 03 is a REN of 0.3). The REN is used to determine the number of devices that may be connected to a telephone line. For earlier products, the REN is separately shown on the label. If requested, this number must be provided to the telephone company.

Excessive RENs on a telephone line may result in the devices not ringing in response to an incoming call. In most, but not all areas, the sum of RENs should not exceed five (5.0). To be certain of the number of devices that may be connected to a line, as determined by the total RENs, contact the local telephone company.

This equipment is designated to connect to the telephone network or premises wiring using a compatible modular jack that is Part 68 compliant. An FCC compliant telephone cord and modular plug is provided with the equipment. See the Installation Information section of this User Guide for details.

A plug and jack used to connect this equipment to the premises wiring and telephone network must comply with the applicable FCC Part 68 rules and requirements adopted by the ACTA. A compliant telephone cord and modular plug is provided with this product. It is designed to be connected to a compatible modular jack that is also compliant. See installation instruction for details.

If this terminal equipment (Dual Connect Router) causes harm to the telephone network, the telephone company may request you to disconnect the equipment until the problem is resolved. The telephone company will notify you in advance if temporary discontinuance of service is required. If advance notification is not practical, the telephone company will notify you as soon as possible. You will be advised of your right to file a complaint with the FCC if you believe such action is necessary.

If you experience trouble with this equipment (Dual Connect Router), do not try to repair the equipment yourself. The equipment cannot be repaired in the field and must be returned to the Westell, Inc. Contact Westell Technical Support at telephone no. (630) 375-4500 for instructions on product return.

The telephone company may make changes to their facilities, equipment, operations, or procedures that could affect the operation of this equipment. If this happens, the telephone company will provide advance notice in order for you to make the modifications necessary to maintain uninterrupted service.

If your home has specially wired alarm equipment connected to the telephone line, ensure that the installation of this equipment (Dual Connect Router) does not disable your alarm equipment. If you have questions about what will disable alarm equipment, consult your telephone company or a qualified installer.

This equipment cannot be used on public coin phone service provided by the telephone company. Connection of this equipment to party line service is subject to state tariffs.

3.2 Canada Certification Notice

The Industry Canada label identifies certified equipment. This certification means that the equipment meets certain telecommunications network protective, operations and safety requirements as prescribed in the appropriate Terminal Equipment Technical Requirements document(s). The department does not guarantee the equipment will operate to the user's satisfaction.

This equipment meets the applicable Industry Canada Terminal Equipment Technical Specification. This is confirmed by the registration number. The abbreviation, IC, before the registration number signifies that registration was performed based on a Declaration of Conformity indicating that Industry Canada technical specification were met. It does not imply that Industry Canada approved the equipment. The Ringer Equivalence Number (REN) is 0.0. The Ringer Equivalence Number that is assigned to each piece of terminal equipment provides an indication of the maximum number of terminals allowed to be connected to a telephone interface. The termination on an interface may consist of any combination of devices subject only to the requirement that the sum of the Ringer Equivalence Numbers of all the devices does not exceed five.

Before installing this equipment, users should ensure that it is permissible to be connected to the facilities of the local Telecommunication Company. The equipment must also be installed using an acceptable method of connection. The customer should be aware that compliance with the above conditions may not prevent degradation of service in some situations. Connection to a party line service is subject to state tariffs. Contact the state public utility commission, public service commission, or corporation commission for information.

If your home has specially wired alarm equipment connected to the telephone line, ensure that the installation of this equipment (Dual Connect Router) does not disable your alarm equipment. If you have questions about what will disable alarm equipment, consult your telephone company or a qualified installer.

If you experience trouble with this equipment (Dual Connect Router), do not try to repair the equipment yourself. The equipment cannot be repaired in the field and must be returned to the manufacturer. Repairs to certified equipment should be coordinated by a representative, and designated by the supplier. Contact Westell Technical Support at telephone no. (630) 375-4500 for instructions on product return.

The termination on an interface may consist of any combination of devices subject only to the requirement that the sum of the Ringer Equivalence Numbers of all the devices does not exceed five.

Users should ensure, for their own protection, that the electrical ground connections of the power utility, telephone lines, and internal, metallic water pipe system, if present, are connected together. This precaution may be particularly important in rural areas.



Users should not attempt to make such connections themselves, but should contact the appropriate electrical inspection authority, or electrician, as appropriate.

4. SYSTEM REQUIREMENTS

4.1 Minimum System Requirements for 10/100 Base-T/Ethernet Installation

The following system specifications are required for optimum performance of the Dual Connect Router via 10/100 Base-T installation:

- Pentium® or equivalent and above class machines, Macintosh
- Microsoft® Windows® (95, 98, NT 4.0, 2000, or XP) or Macintosh® OS 9.X or OS X installed
- Computer Operating System CD-ROM on hand
- Internet Explorer 4.x or Netscape Navigator 4.x or higher
- 32 MB RAM
- 10 MB of free hard drive space
- TCP/IP Protocol stack installed
- 10/100 Base-T Network Interface Card (NIC)

4.2 Minimum System Requirements for USB Installation

The following system specifications are required for optimum performance of the Dual Connect Router via USB installation:

- Pentium® or equivalent and above class machines
- Microsoft® Windows® 98, ME, 2000, or XP installed
- Computer Operating System CD-ROM on hand
- Internet Explorer 4.x or Netscape Navigator 4.x or higher
- 32 MB RAM
- 10 MB of free hard drive space
- USB Version 1.0 or 1.1 compliant bus
- An available USB Port

5. INSTALLATION INFORMATION

5.1 Installation Requirements

To install the Dual Connect Router, you will need the following:

- A Network Interface Card (NIC) installed in your PC or
- An available USB port installed on your PC.
- A DSL-ready line (provided by your Service Provider).

NOTE: Please wait until you have received notification from your service provider that your DSL line has been activated before installing this Router and software.

5.2 Before you begin:

Make sure that your kit contains the following items:

- Westell WireSpeed Dual Connect NAT Router
- Power Supply
- RJ-45 Ethernet cable (straight-through)
- USB cable
- RJ-11 Phone cable
- Westell CD-ROM containing USB software drivers and User Guide in PDF format
- Quick Start Guide

5.3 Microfilters

ADSL signals must be blocked from reaching each telephone, answering machine, fax machine, computer modem or any similar conventional device. Failure to do so may degrade telephone voice quality and ADSL performance. Install a microfilter if you desire to use the DSL-equipped line jack for telephone, answering machine, fax machine or other telephone device connections. Microfilter installation requires no tools or telephone rewiring. Just unplug the telephone device from the baseboard or wall mount, and plug in a microfilter. Next, plug in the telephone device. Contact Westell to obtain a microfilter kit, which contains multiple microfilters for your installation.

5.4 Router Installations

This section explains the procedures for installing Westell's Dual Connect Router via 10/100 Base-T/Ethernet or USB connection.





NOTE: This product supports simultaneous use of Ethernet and USB ports. Please wait until you have received notification from your Service Provider that your DSL line has been activated before installing your Dual Connect Router. See section 5.4.3 for instructions on simultaneous hardware (Ethernet and USB) installation.

NOTE: If you are using a Westell Dual Connect Router in conjunction with an Ethernet Hub or Switch, refer to the manufacturer's instructions for proper installation and configuration. Westell recommends the use of a surge suppressor to protect equipment attached to the AC power supply.

5.4.1 Router Installation via 10/100 Base-T Ethernet



NOTE: Before you connect the Dual Connect Router via 10/100 Base-T, you must have an available Ethernet card installed in your computer. If your Ethernet card does not auto-negotiate, you must set it to half duplex. Refer to the Ethernet card manufacturer's instructions for installing and configuring your Ethernet card. If you do not have an Ethernet card installed in your computer, go to section 5.4.2.

1. Connect the power supply cord to the power connector marked **12V** on the rear panel of the Router. Plug the other end of the power supply cord into a surge-protected AC wall socket.
2. Connect the DSL phone cable from the jack on the rear panel of the Router marked  to the DSL-equipped telephone line jack on the wall. **IMPORTANT:** Do not use a DSL filter on this connection. You must use the phone cord that was provided with the Router kit.
3. Connect the Ethernet cable from the Ethernet jack marked  on the rear panel of the Router to the Ethernet port on your computer.

Congratulations! You have completed the Ethernet hardware installation for your Dual Connect Router. No software installation is required when using an Ethernet connection. Refer to your Internet Service Provider's instructions for installing subscriber software and connecting to the Internet. You must now go to section 7.

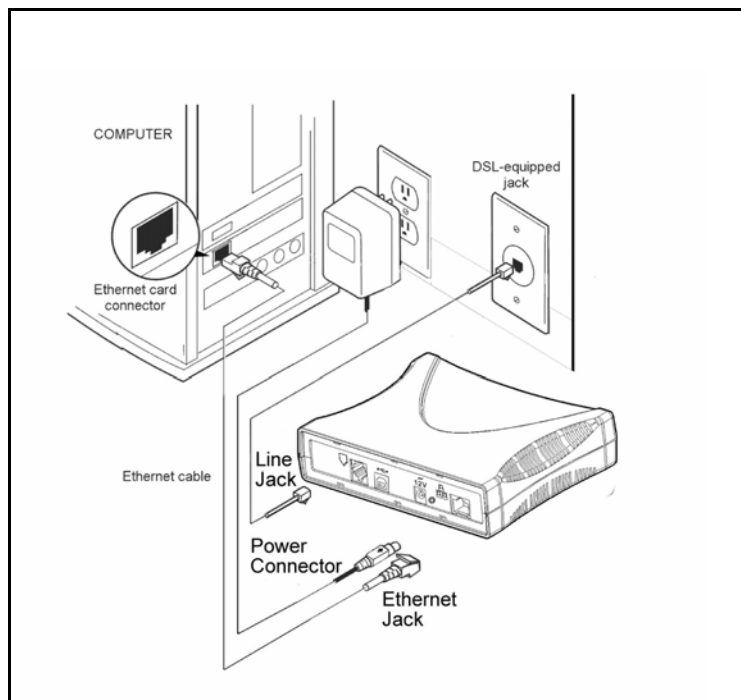




Figure 1. Connection via 10/100 Base-T Ethernet

5.4.2 Router Installation via USB



NOTE: The USB installation will not function for Macintosh computers. Macintosh computers must install the Router via Ethernet connection. See section 5.4.1.

1. Connect the power supply cord to the power connector marked **12V** on the rear panel of the Router. Plug the other end of the power supply cord into a surge-protected AC wall socket.
2. Connect the DSL phone cable from the connector marked  on the rear panel of the Router marked to the DSL-equipped telephone line jack on the wall. **IMPORTANT:** Do not use a DSL filter on this connection. You must use the phone cord that was provided with the Router kit.
3. Connect the USB cable from the USB connector marked  on the rear panel of the Router to the USB port on the PC.

Congratulations! You have completed the USB hardware installation for your Dual Connect NAT Router. Refer to your Internet service provider's instructions for installing subscriber software and connecting to the Internet. You must now go to Section 6 to begin the USB drivers software installation.

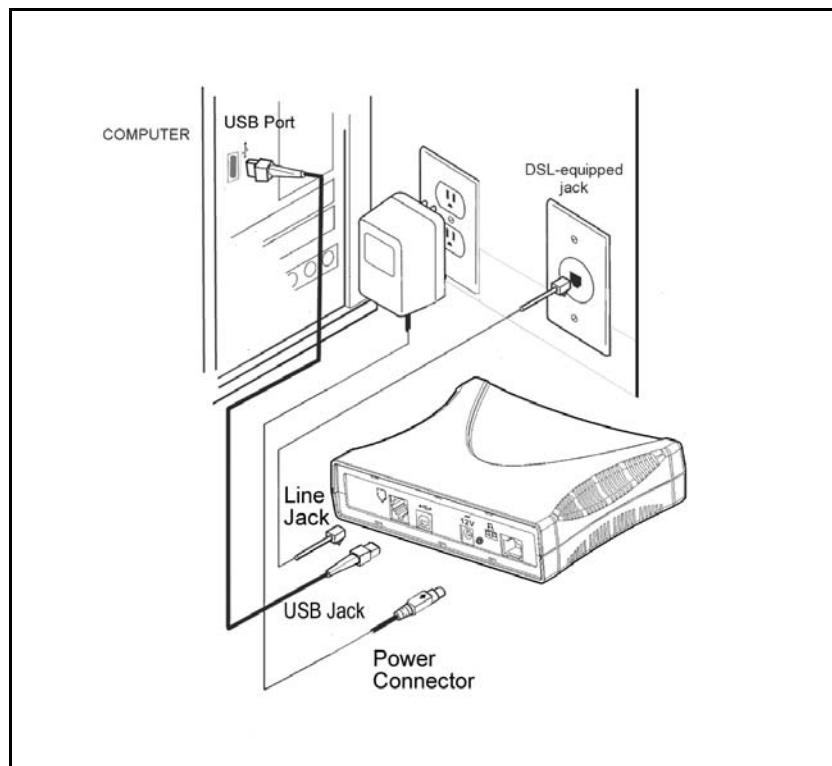





Figure 2. Connection via USB

5.4.3 Router Installation via 10/100 Base-T Ethernet and USB (Simultaneous Installation)

The Dual Connect Router supports simultaneous use of 10/100 Base-T Ethernet and USB ports. The following instructions explain how to install your Router using both Ethernet and USB ports.

1. Connect the power supply cord to the power connector marked **12V** on the rear panel of the Router. Plug the other end of the power supply cord into a surge-protected AC wall socket.
2. Connect the DSL phone cable from the jack on the rear panel of the Router marked  to the DSL-equipped telephone line jack on the wall. **IMPORTANT: Do not** use a DSL filter on this connection. You must use the phone cord that was provided with the Router kit.
3. Connect the Ethernet cable from the Ethernet jack marked  on the rear panel of the Router to the Ethernet port on your computer.
4. Connect the USB cable from the USB connector marked  on the rear panel of the Router to the USB port on the PC.

Congratulations! You have completed the simultaneous hardware (Ethernet and USB) installation for your Dual Connect NAT Router. Refer to your Internet service provider's instructions for installing subscriber software and connecting to the Internet. You must now go to Section 6 to begin the USB software installation. (No software installation is required when using an Ethernet connection.)

NOTE: Figure 3 illustrates a USB connection from the Dual Connect Router to a laptop. However, you may connect the USB cable from the Dual Connect Router to any PC that has the minimum system requirements installed and supports USB connectivity.

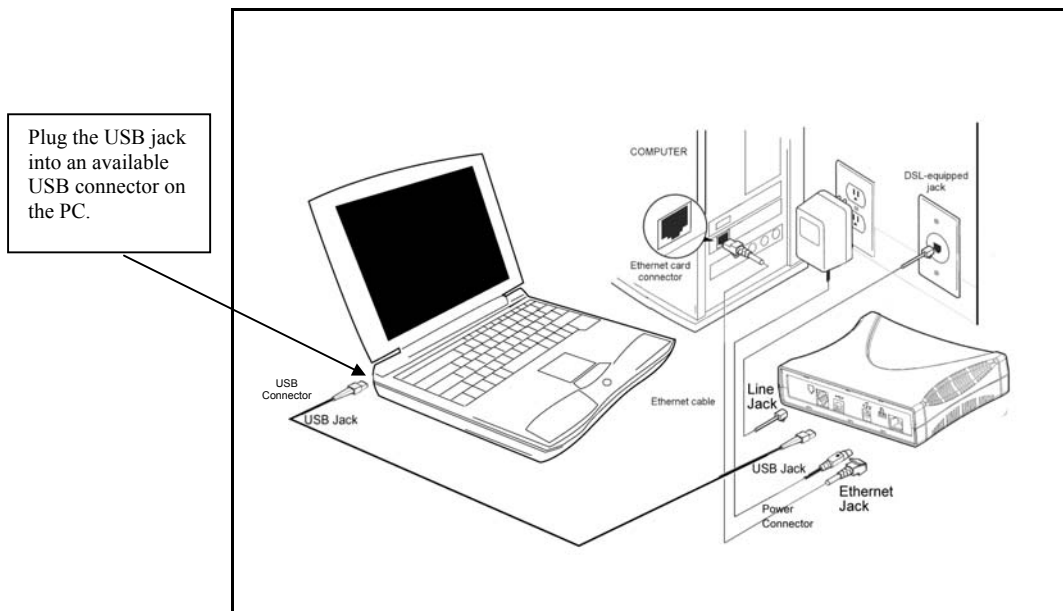


Figure 3. Simultaneous Connection via 10/100 Base-T Ethernet and USB

5.5 LED Indicators

The LED indicators are used to verify the unit's operation and status. LED states are described in Table 1.

Table 1. LED States and Descriptions

| LED | State | Description |
|----------|--------------------------------|--|
| POWER | Solid Green | Power ON |
| | No Light | No Power |
| READY | Slow Flashing Green | Power ON and waiting for carrier detect signal (1 flash/sec) |
| | Moderate Flashing Green | Power ON and attempting synchronization (2 flashes/sec) |
| | Solid Green | Power ON and synchronized with ADSL line card |
| | Steady Red (less than 20 sec.) | Hardware power-up in process |
| | Flashing Yellow | Modem failed self-diagnostics |
| | Solid Yellow | Modem is in safe boot mode |
| | No Light | No Power |
| ETHERNET | Solid Green | Ethernet link established |
| | Flashing Green | Transmit or Receive Activity |
| | No Light | No link established |
| USB | Solid Green | USB link established |
| | Flashing Green | Transmit or Receive Activity |
| | No Light | No USB link established |

5.6 Cable Connectors and Switch Locations

The following items are located on the rear panel of the Router. See Figure 4. Tables 2 through 5 list the connector types and pinout designations.

- DSL Connector (RJ-11)
- USB Connector
- Power Connector (Barrel)
- Reset Button
- Ethernet Connector (RJ-45)

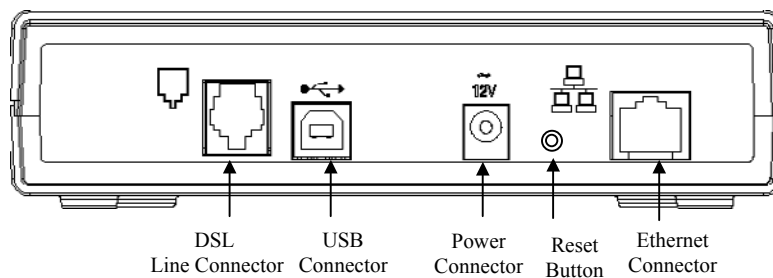


Figure 4. Dual Connect Router Rear Panel

Table 2. Connector Descriptions





| SYMBOL | NAME | TYPE | FUNCTION |
|---|----------|------------------------------|---|
|  | DSL | 6-pin RJ-11 modular jack | Connects to an ADSL-equipped telephone jack or DSL connection of a POTS splitter. |
|  | USB | 4-pin USB Series B connector | Connects the USB device to the PC. |
|  | Power | Barrel connector | Power source. |
|  | Ethernet | 8-pin (RJ-45) modular jack | Connects the Ethernet device to the PC. |

Table 3. DSL Pinouts

| Pinout | Description |
|------------|-------------|
| 1, 2, 5, 6 | Not Used |
| 3 | DSL Tip |
| 4 | DSL Ring |

Table 4. USB Series B Connector Pinouts

| Pin | Name | Description | Cable Color |
|-----|----------|-------------|-------------|
| 1 | VBUS/Vcc | 5 Vdc | Red |
| 2 | D – | Data – | White |
| 3 | D + | Data + | Green |
| 4 | GND | Ground | Black |

Table 5. Ethernet Pinouts

| Pinout | Description |
|---------|-------------|
| 1 | Rx+ |
| 2 | Rx- |
| 3 | Tx+ |
| 4,5,7,8 | Not Used |
| 6 | Tx- |

6. INSTALLING THE USB DRIVERS

This section explains how to install the USB modem drivers for the Dual Connect Router. If you are using only Ethernet ports, USB driver installation is not necessary. The Microsoft® Plug and Play auto-detect feature recognizes when new hardware has been installed. After you connect the Router to the PC, the Router will be detected automatically.

Before you begin the USB driver installation, you must determine which operating system is installed on your PC. To view information about your operating system, go to the 'My Computer' icon located on your desktop and then right click. Next, select 'Properties' from the options displayed. The 'System Properties' box will appear. At the 'System Properties' box, click on the 'General' tab. This will display the 'System Properties' for your PC, including the operating system installed on your PC (e.g., Microsoft Windows 98).

6.1 Installing the Westell CD-ROM:

1. Place the Westell CD-ROM that you received in the Router kit into the CD-ROM drive of the PC that is connected to the USB port.
2. Go to the USB driver installation section (of this manual) that matches your operating system and follow the procedures outlined in that section.
3. Verify the connection to the computer by observing the state of the USB LED. Once the USB drivers have been installed, the USB LED should be solid green. Solid green indicates a USB connection has been established. Refer to Table 1 (LED States and Descriptions) of this User Guide.

6.2 Installing the USB Drivers for Windows 98



IMPORTANT: Confirm that the Westell USB Driver CD-ROM is inserted in the appropriate drive before continuing this installation.

1. After you have connected the Westell Dual Connect Router to your PC, the **Found New Hardware** window appears. See Figure 5. In a few moments, the **Add New Hardware Wizard** window will open. See Figure 6. Click **Next**.

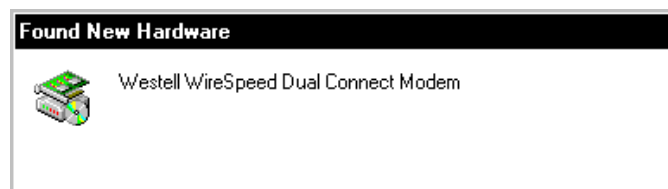


Figure 5. Windows 98

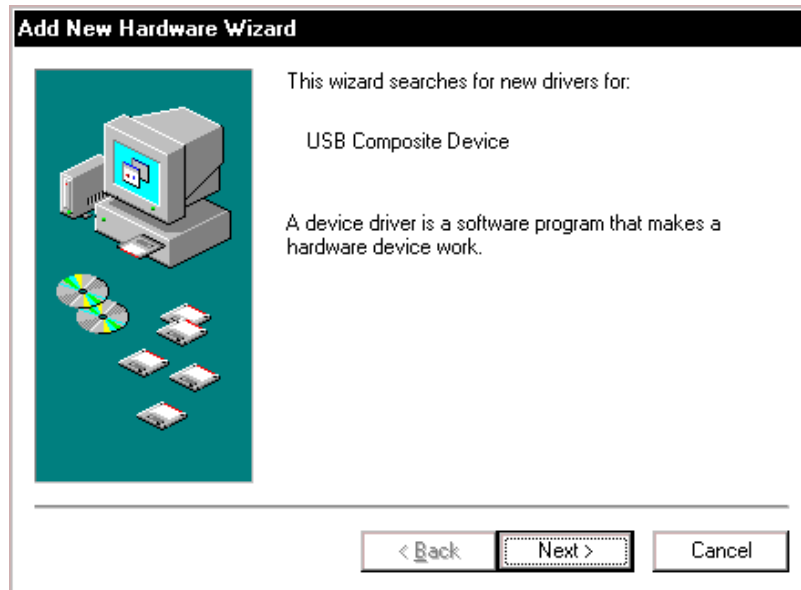


Figure 6. Add New Hardware

2. **Windows 98:** Click the option button for **Search for the best driver for your device. (Recommended)**. See Figure 7. Click **Next**.



Figure 7. Windows 98

3. **Windows 98:** Select **CD-ROM drive** option. See Figure 8. Click **Next**. Windows will search for the driver.

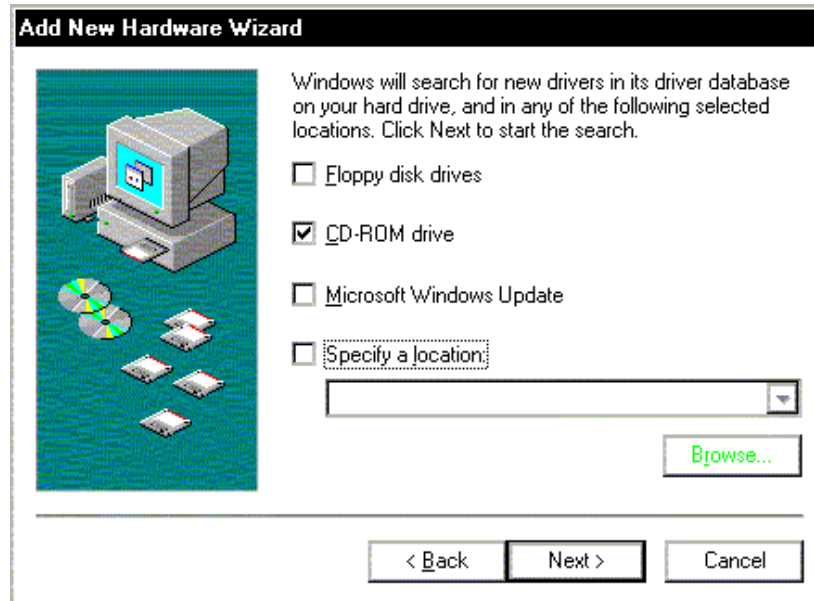


Figure 8. Windows 98

4. **Windows 98:** Select the option button **The updated driver (Recommended) Westell Dual Connect Modem**. See Figure 9. Click **Next**.



Note: If Figure 9 does not appear at this step, and Figure 10 appears with the text 'USB Composite device', 'C:\Windows\Inf\USB.Inf', do not continue. Go back to Step 3 and specify the location of the Westell CD-ROM.



Figure 9. Location of Hardware Device Driver

5. **Windows 98:** Windows will display the location of the driver. See Figure 10. Click **Next**.
Note: The drive “letter” may vary.

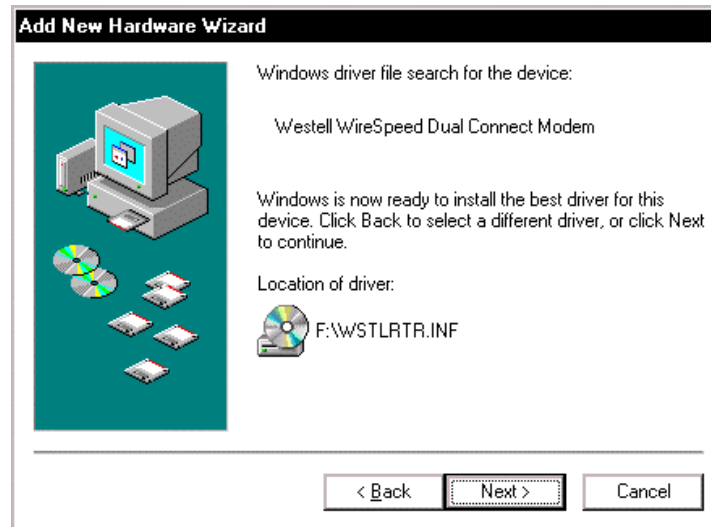


Figure 10. Loading Device Driver

6. **Windows 98:** Remove the Westell CD from the CD-ROM Drive. Next, insert the Windows operating system CD into the CD-ROM Drive. See Figure 11. Click **OK**.

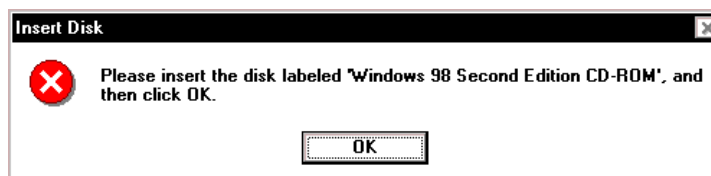


Figure 11. Insert Windows Operating System CD

7. **Windows 98:** The system will begin copying files (Figure 12).

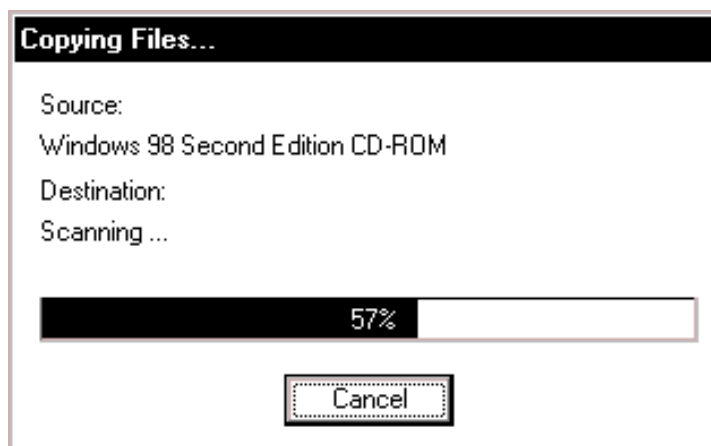


Figure 12. Copying Files

8. **Windows 98:** Figure 13 may pop up, depending on how Windows 98 was installed on the computer. The installation of the Westell modem requires files that are supplied by Microsoft for Windows 98. If Figure 14 pops up, insert the Windows 98 Operating System CD into the computer's CD-ROM drive, wait a moment for the CD to be recognized by the system, and then click on **OK**. The system should find the required files on the Windows 98 CD and automatically complete the installation.

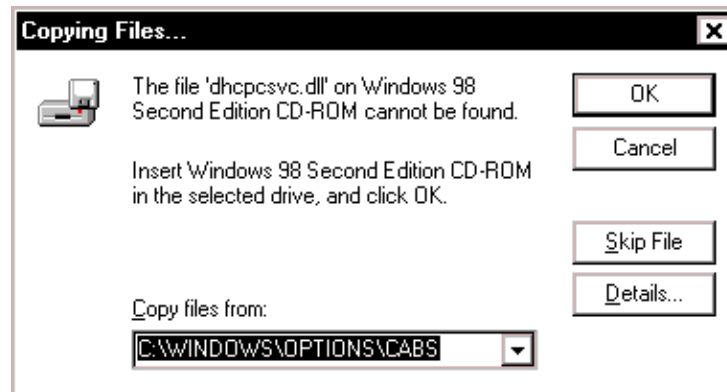


Figure 13. Windows 98

If the Operating System CD is not available, or if Figure 13 pops up again, you will need to manually specify the location of the files. The required files may be stored on your hard drive. A common location for these files is "C:\Windows\Options\Cabs." Try specifying this path or the path to your CD-ROM drive (usually "D:\") by clicking the **Browse...** button in the **Insert Disk** screen (see Figure 14). When you have specified the correct path, click on **OK**. The system will begin copying the files. See Figure 15.

NOTE: It is very important that the Windows 98 files be installed. Do not click on **Cancel** or **Skip File** in the dialogs, doing so will result in an improper installation, and the modem will not function properly.

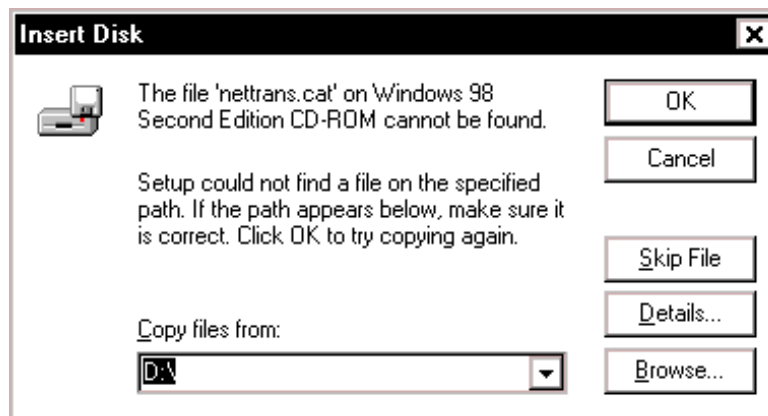


Figure 14. Windows 98

9. **Windows 98:** The window below confirms that the PC has finished loading the drivers. See Figure 15. Click on **Finish**.

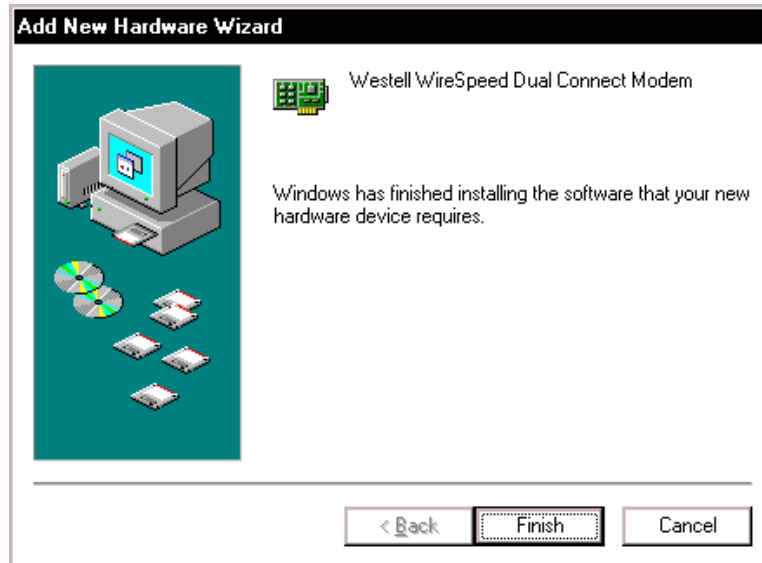


Figure 15. Windows 98

10. **Windows 98:** Click **Yes** to restart your computer. See Figure 16.

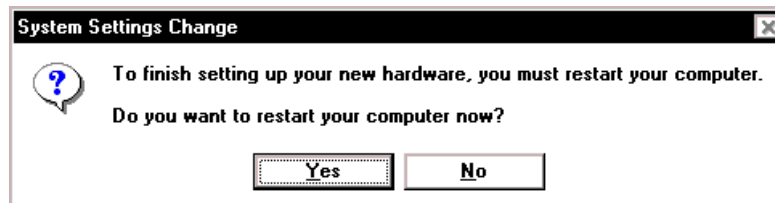


Figure 16. Restart the Computer

Congratulations! You have completed the software installation for the USB drivers. After the computer has restarted, the Router is ready for use. Refer to the Internet Service Provider (ISP) installation manual to install the software required for your Internet connection. You must now go to section 7.

6.3 Installing the USB Drivers for Windows ME

1. **Windows ME:** After you have connected the Dual Connect Router to your PC, the **Found New Hardware** window appears. See Figure 17. In a few moments, the **Add New Hardware Wizard** window appears. See Figure 18. Click the option button for **Automatic search for a better driver (Recommended)**. Click **Next**.

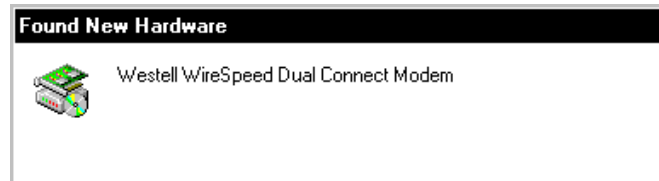


Figure 17. Windows ME

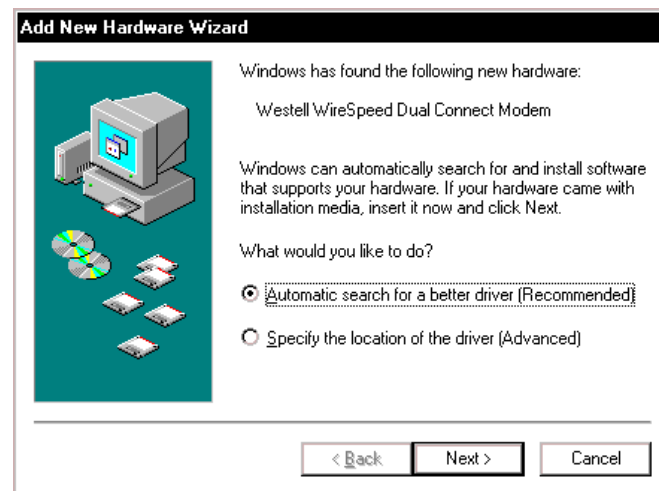


Figure 18. Windows ME

2. **Windows ME:** Windows will display the location of the driver. See Figure 19.

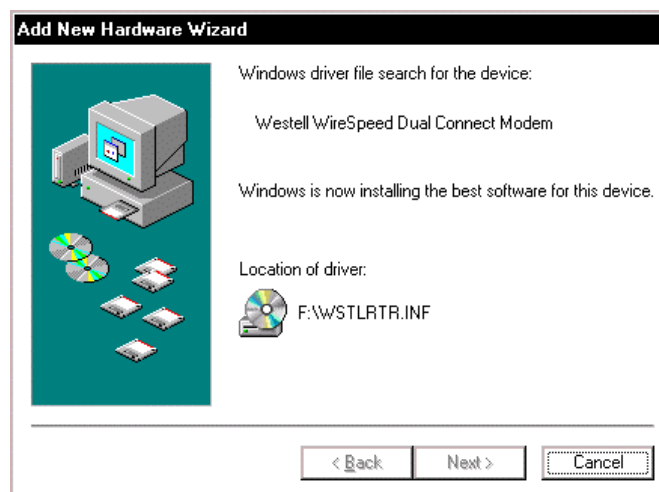


Figure 19. Location of Hardware Device Driver

3. **Windows ME:** The window below confirms that the PC has finished loading the drivers. See Figure 20. Click **Finish**.



Figure 20. Found New Hardware

4. **Windows ME:** When the **System Settings Change** screen appears, the USB drivers are installed properly. See Figure 21. Click **Yes**.

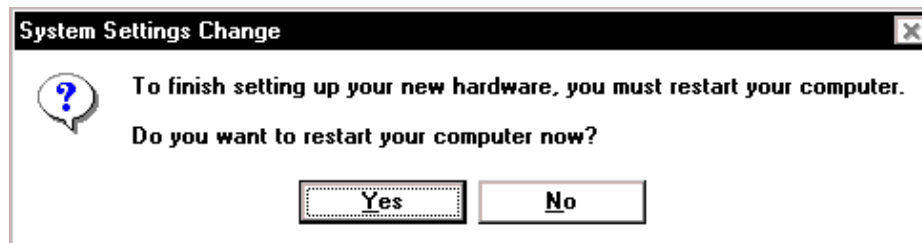


Figure 21. Restart the Computer

Congratulations! You have completed the software installation for the USB drivers. After the computer has restarted, the Router is ready for use. Refer to the Internet Service Provider (ISP) installation manual to install the software required for your Internet connection. You must now go to section 7.

6.4 Installing the USB Driver for Windows 2000

1. After you have connected the Westell Dual Connect Router to your PC, the **Found New Hardware** window appears. See Figure 22. In a few moments, the **Found New Hardware Wizard** window appears. See Figure 23. Click **Next**.

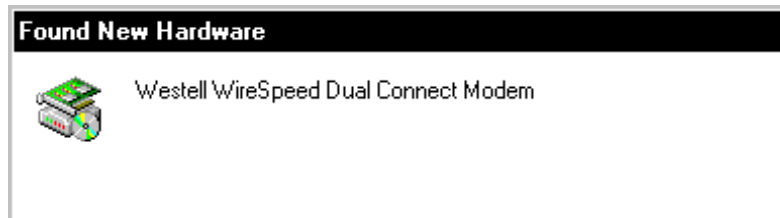


Figure 22. Found New Hardware



Figure 23. Welcome to Install Device Driver

2. **Windows 2000:** The **Install Hardware Device Drivers** window appears. Select **Search for a suitable driver for my device (recommended)**. See Figure 24. Click **Next**.

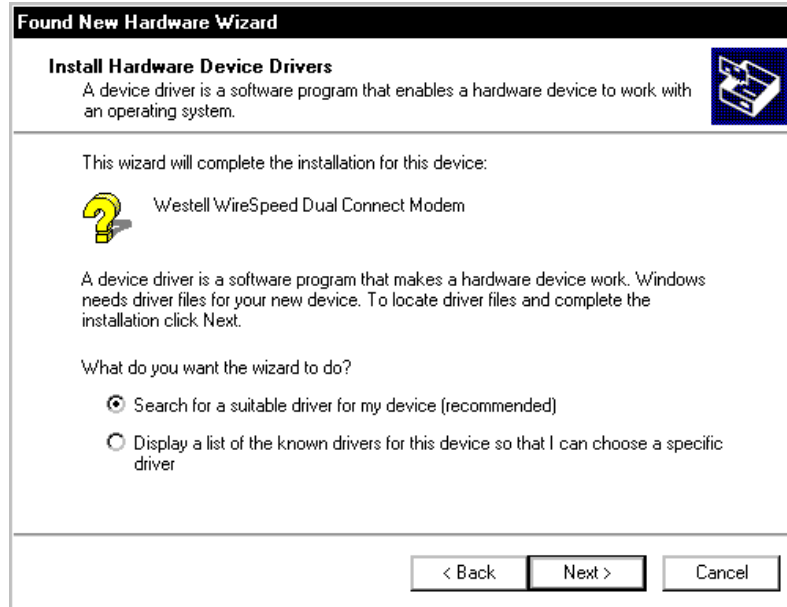


Figure 24. Search for Device Driver

3. **Windows 2000:** The **Driver Files Search Results** window appears. Select the **CD-ROM drives** option. See Figure 25. Click **Next**.

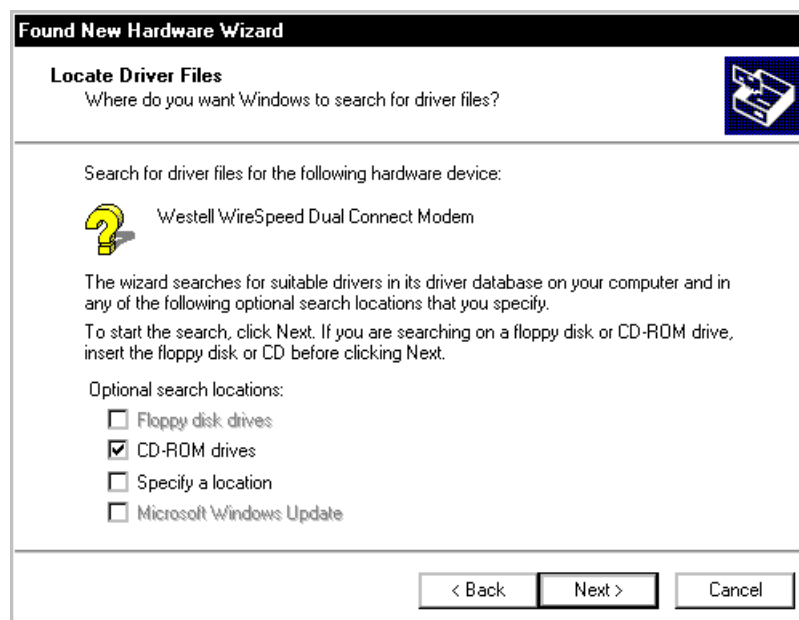


Figure 25. Locate Driver Files

4. **Windows 2000:** The **Driver Files Search Results** window appears. See Figure 26. Click **Next**.
Note: The drive “letter” may vary.

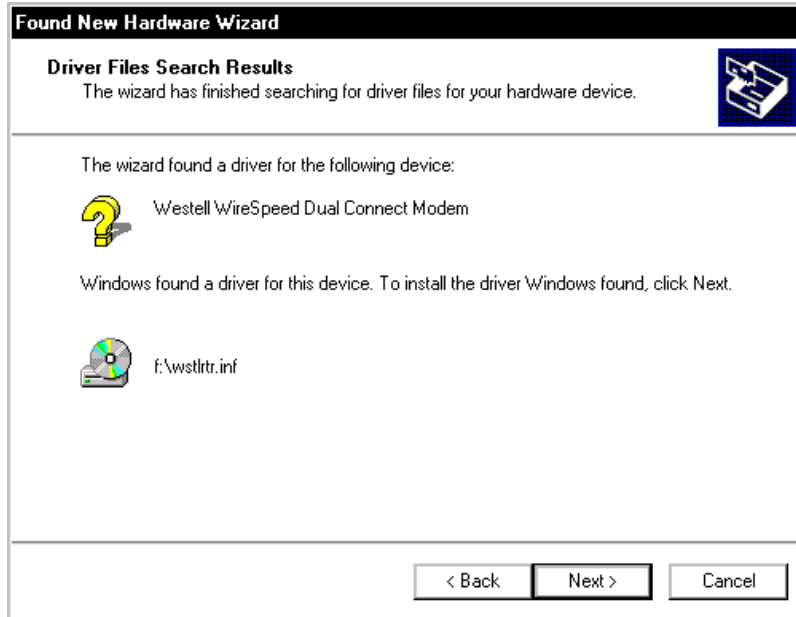


Figure 26. Driver Files Search Results

5. **Windows 2000:** The window below confirms that the PC has finished loading the drivers See Figure 27. Click **Finish**.



Figure 27. Drivers Loaded

6. **Windows 2000:** When the **System Settings Change** screen appears, the USB drivers are installed properly. See Figure 28. Click **Yes**.

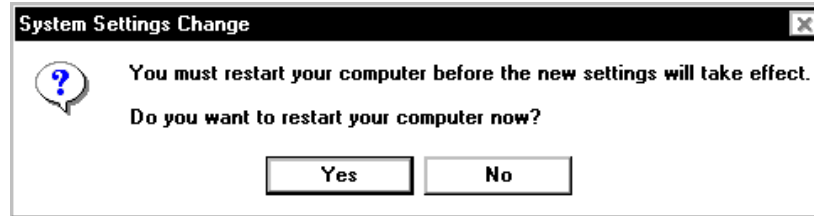


Figure 28. Restart Your Computer

Congratulations! You have completed the software installation for the USB drivers. After your computer has restarted, the Router is ready for use. Refer to the Internet Service Provider (ISP) installation manual to install the software required for your Internet connection. You must now go to section 7.

6.5 Installing the USB Driver for Windows XP

1. After you have connected the Westell Dual Connect Router to your PC, the **Found New Hardware Wizard** window will open. See Figure 29. Select option button **Install the software automatically (Recommended)**. Click **Next**.

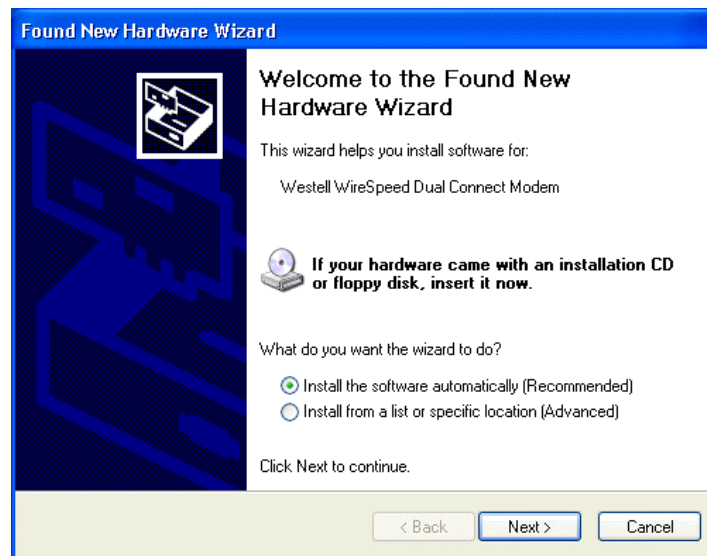


Figure 29. Windows XP

2. **Windows XP:** The window below confirms that the PC has finished loading the drivers. See Figure 30. Click **Finish**.

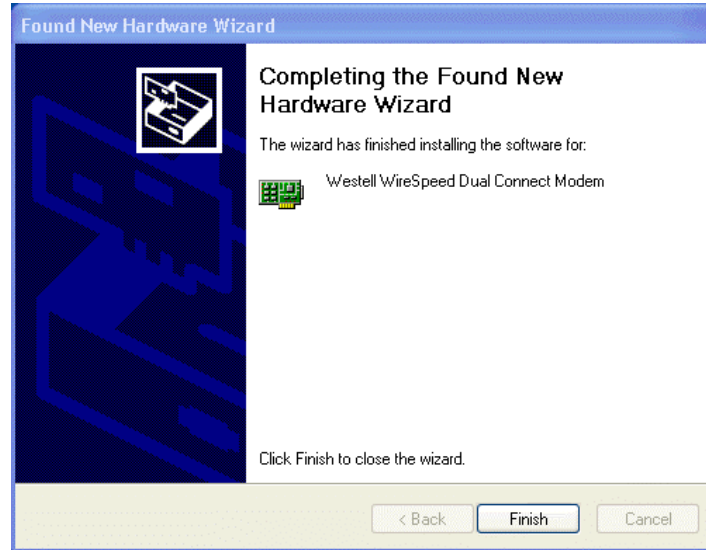


Figure 30. Windows XP

Congratulations! You have completed the software installation for the USB drivers. The Router is now ready for use. Refer to the Internet Service Provider (ISP) installation manual to install the software required for your Internet connection. You must now go to section 7.

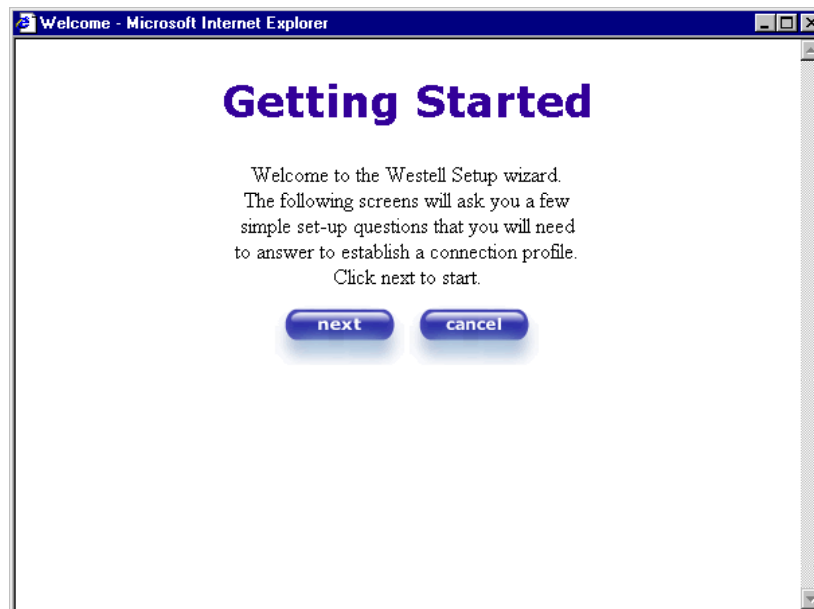
7. CONFIGURING THE ROUTER FOR INTERNET CONNECTION

To surf the Internet using your Westell Dual Connect Router, you must set up your account profile, confirm your DSL sync, and establish a PPP session with your Internet Service Provider (ISP). After you have connected to the Internet, you may use the Router's Network Address Translation (NAT) feature to configure your Router for a specific NAT service, details discussed later in this section.

7.1 Setting Up an Account Profile

NOTE: Before you set up your account profile, you must obtain your **Account ID** and **Account Password** from your Internet service provider. You will use this information when you set up your account parameters. (Account Parameters are required before connecting to the Internet.) If you are at a screen and need help, click on the **Help** button to learn more about the screen.

After connecting the Router, bring up your Web browser and type **http://dslrouter** or **http://192.168.1.1** in the browser's address window. Press **Enter** on your keyboard. The **Getting Started** screen will appear. Click on **next**.

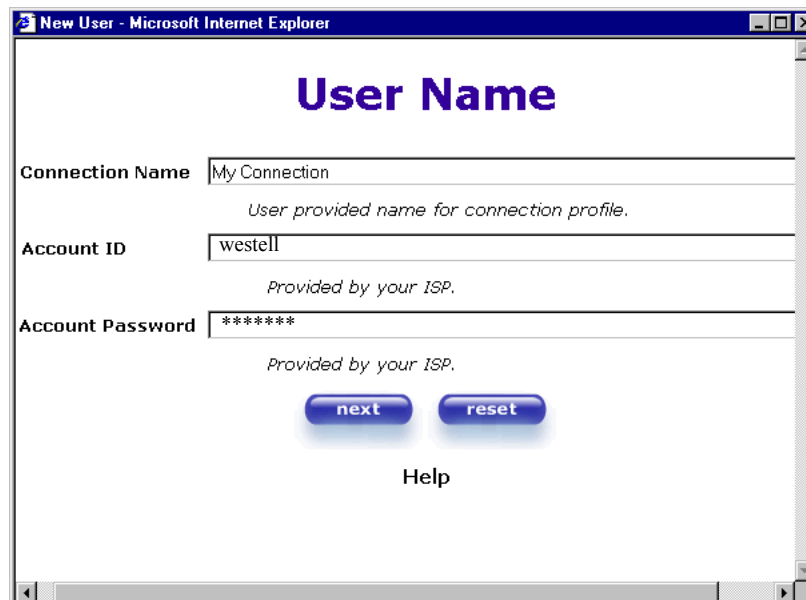


In the following screen, type in your account parameters, which include:

- **Connection Name**-the Connection Name is a word or phrase that you use to identify your account. (You may enter up 64 characters in this field.)
- **Account ID**-the Account ID is provided by your Internet Service Provider. (You may enter up 255 characters in this field.)
- **Account Password**-the Account Password is provided by your Internet Service Provider. (You may enter up 255 characters in this field.)




When you enter your account parameters into the **User Name** screen, they will be displayed (as shown in the screen below). Click on **next** if you want your account parameters to take affect. Click on **reset** if you do not want the account parameters that you entered to take affect, or if you want to re-enter the parameters.



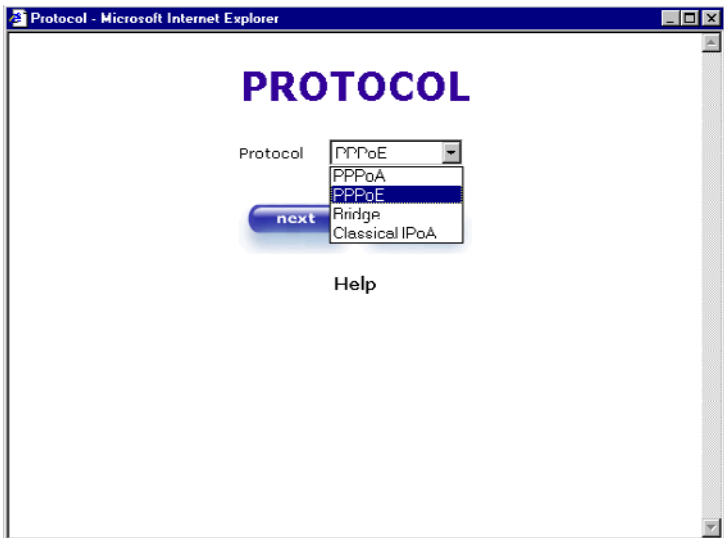
Enter the VPI and VCI values that you obtained from your Internet Service Provider. Click on **next**.

NOTE: Depending on your Internet Service Provider, the **VPI/VCI** screen may come pre-configured and it will be displayed here. In this case, you will not be able to change any values in this screen. Click on **next** to go to the **PROTOCOL** screen.

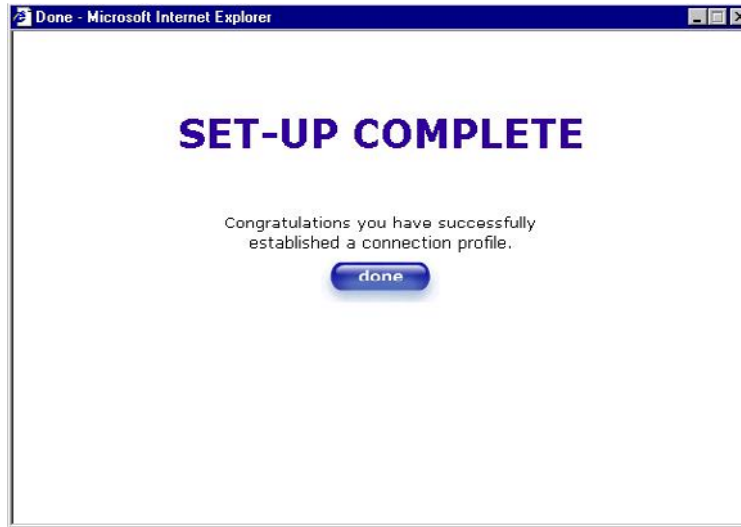


Select the Protocol type that you obtained from your Internet service provider. Click on **next**.

NOTE: Depending on your Internet Service Provider, the **PROTOCOL** screen may come pre-configured and it will be displayed here. In this case, you will need to click on **next** to go to the **SET-UP COMPLETE** screen.



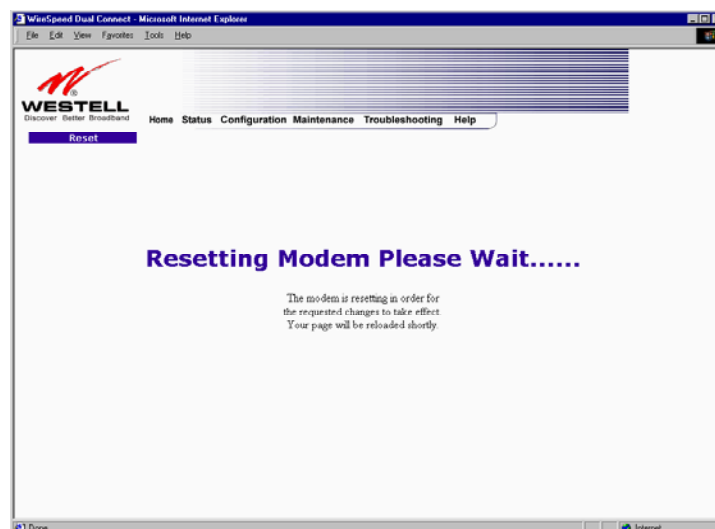
When the **SET-UP COMPLETE** screen appears, you have successfully completed your Account Profile setup. Click on **done**.



You must reset your Router in order to capture your new settings. (If you click on **Cancel**, your new settings will not take affect.) Click on **OK**, this will reset your Router and your new settings will take affect.



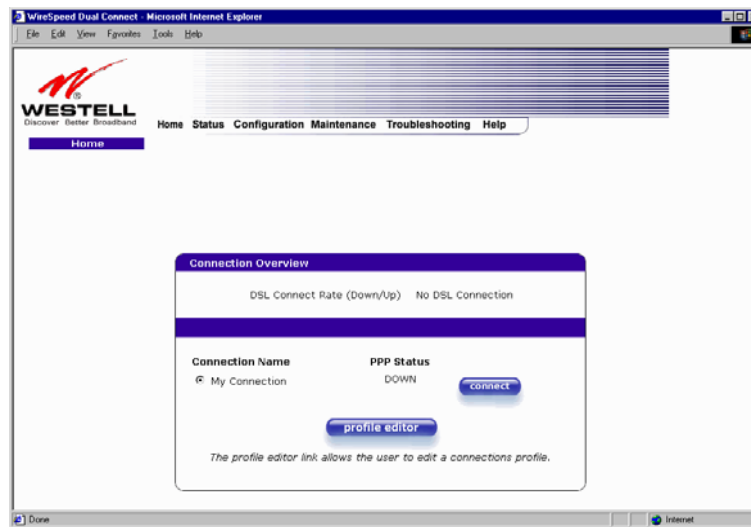
The screen below shows that the Router is being reset.



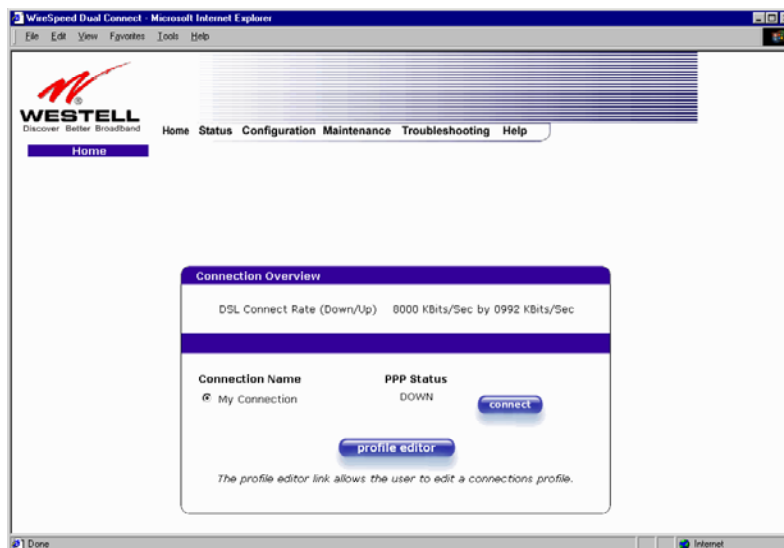
7.2 Establishing a DSL Sync

Remember, you must have active DSL service before the Router can synchronize with your ISP's equipment. To determine if your Router has a DSL sync, view the **DSL Connection Rate** at the **Connection Overview** section (see the following homepage screen). If the status reads **No DSL Connection**, check the DSL physical connection, explained in section 5 (INSTALLATION INFORMATION) of this User Guide.

NOTE: If no DSL sync is established, the **connect** button in this screen will not be displayed. To determine if the DSL sync is established, check the Router's READY LED. If the READY LED is not solid green, you do not have a DSL sync established. Contact your ISP for details.



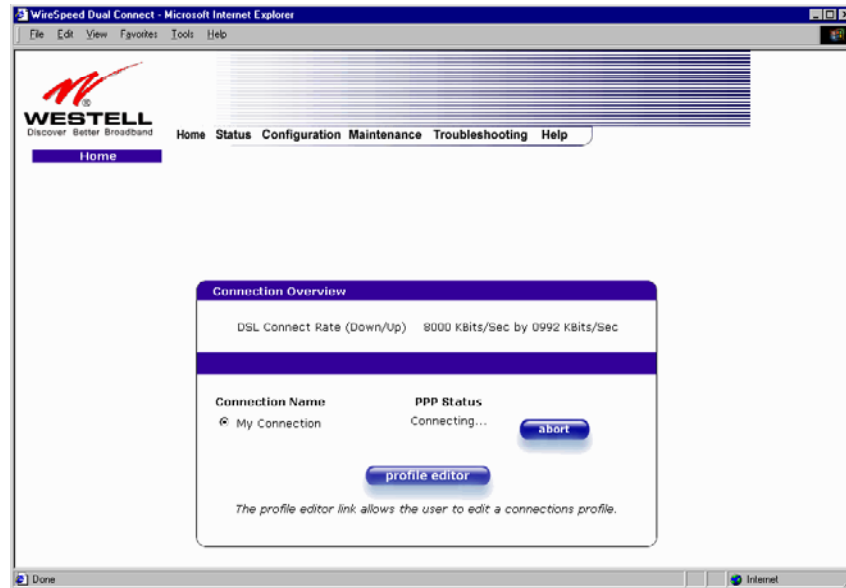
The screen below shows the connection rate with values that indicate a successful SYNC has been established. The connection rate values represent the transmission speed of your DSL line. (The Router may take time to report the values.) Click on the **connect** button to establish a PPP session.



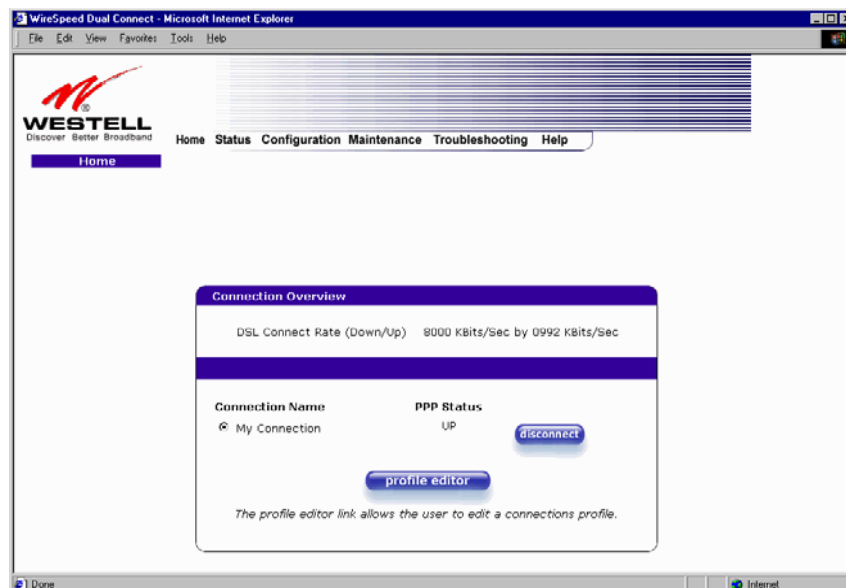
7.3 Establishing a PPP Session

If you select the **connect** button in the **Connection Overview** screen, the screen below will appear briefly. When the **PPP Status** displays **Connecting...**, this indicates that you are establishing a PPP session.

NOTE: The Router will handle transmission rates up to 8 Mbps. Your actual DSL rates may vary depending on your Internet service provider.



Once a PPP session has been successfully established, the **PPP Status** will display **UP**. Congratulations! You may now surf the Internet.

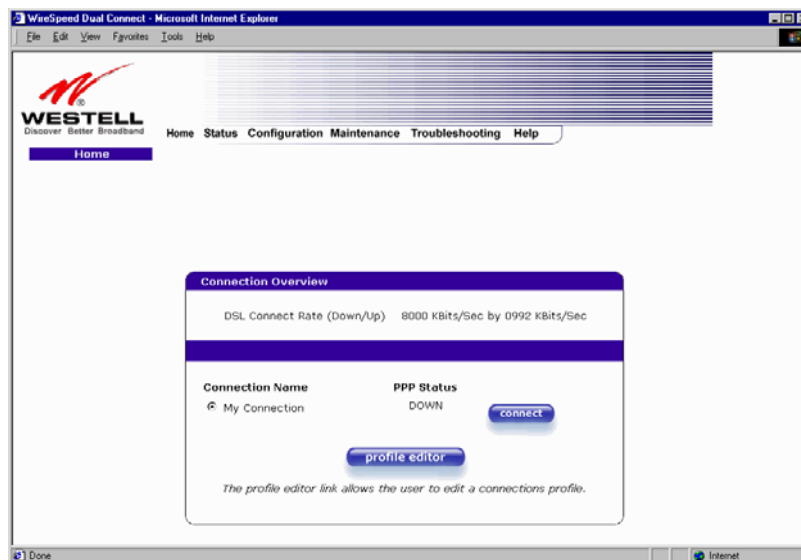


7.4 Disconnecting a PPP Session

If you are ready to disconnect from your Internet service provider, click the **disconnect** button in the **Connection Overview** screen. The following pop-up screen will appear. Click **OK** to disconnect the PPP session.



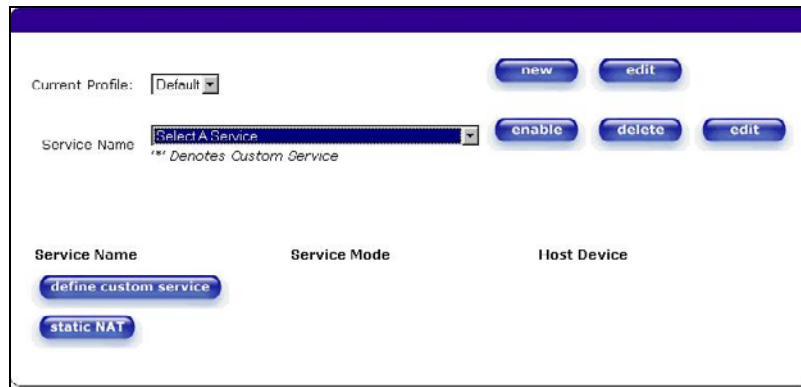
The **PPP Status** in the **Connection Overview** screen, allows you to view the state of your ISP connection. If you click the **disconnect** button in **Connection Overview** screen, the **PPP Status** should display **DOWN**. This indicates that you no longer have an ISP connection. In this event, your Router will maintain its DSL connection. If you want to remove the DSL connection, either disconnect the cable from the DSL connector or remove power from the Router.



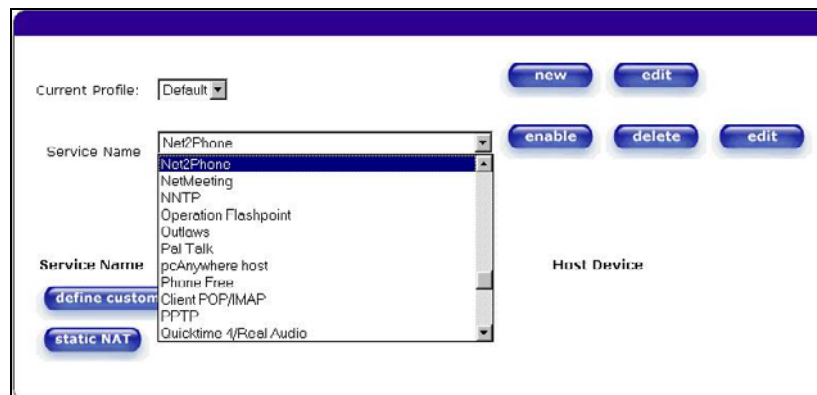
7.5 Configuring NAT Service (optional)

The Westell Dual Connect Router features Network Address Translation (NAT), which supports protocols for applications, games and VPN-specific programs. To use an application that utilizes NAT protocol, you must configure your Router's NAT settings. Select **Service Configuration** from the **Configuration** menu.

NOTE: Westell has developed an extensive list of NAT services and you may select any service from this list. By selecting your specific NAT service and setting up a NAT profile, you will ensure that the appropriate ports on your Router are open and that the required application traffic can pass through your LAN. For a list of supported NAT services, go to section 9.8 (NAT Services).



This screen allows you to attach a predefined NAT service to your default profile. Once you have selected a NAT service from the **Service Name** pull-down arrow, click on **enable**.



If you clicked on **enable**, the following **Host Service** pop-up screen will be displayed. Click on **OK**. This will load the new NAT Configuration and the settings will be saved automatically.

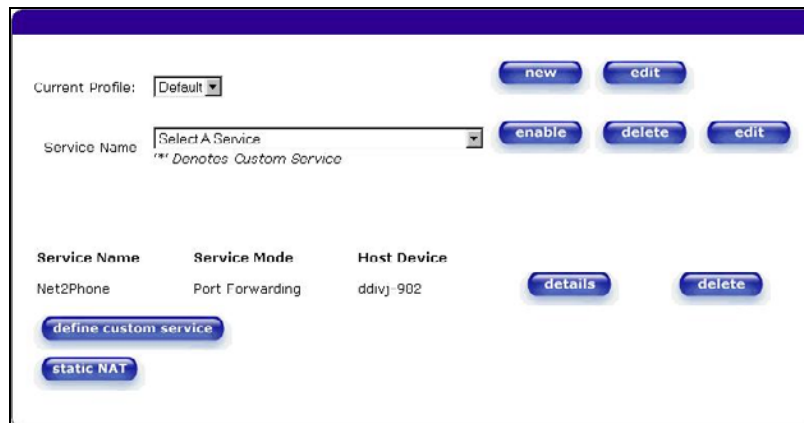


If you clicked on **OK** in the **Host Service?** screen, the **Host Device** screen will be displayed. The **Host Device** screen will allow you to select which device will host the NAT service you selected on your local area network. Select a device from the **Host Device** pull-down arrow and click on **done**.



NOTE: You can attach multiple NAT services to your profile. However, for each NAT service that you attach, you must first select the new NAT service. Next, you must load the new NAT Configuration, as previously explained in this section.

If you want to view the details of the service you selected, click on **details**. If you want to delete the NAT service that is attached to your profile, click on **delete**.



If you select **details**, the screen below will be displayed. It contains the service name, type, protocol, and port information for the NAT service you selected. Click on **close** to continue.



8. SETTING UP MACINTOSH OS X

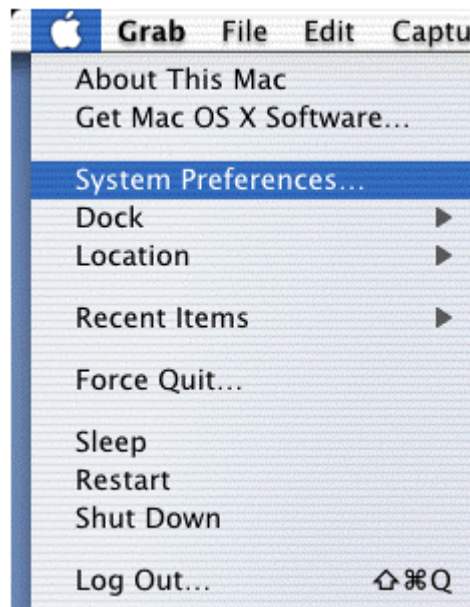
This section provides instructions on how to use your Westell Dual Connect Router with Macintosh Operating System 10. Follow the instructions in this section to create a new network configuration for Macintosh OS X.



NOTE: The USB installation will not function for Macintosh Computers. Macintosh computers must use the Router's Ethernet installation. Refer to page 6 for installation instructions via Ethernet.

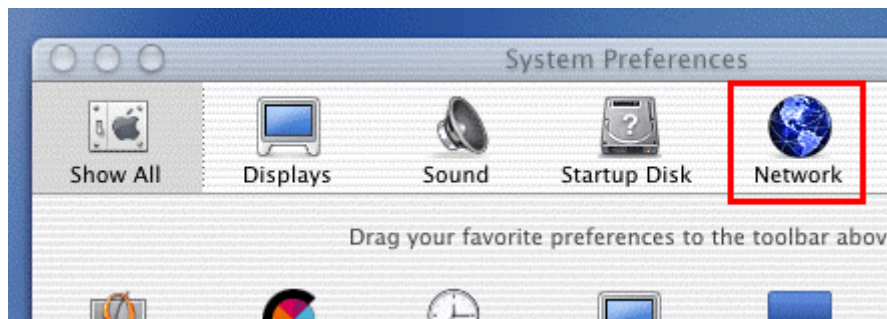
Opening the System Preference Screen

After you have connected the Westell Router to the Ethernet port of your Macintosh, the screen below will appear. Click on the “Apple” icon in the upper right corner of the screen and select **System Preferences....**



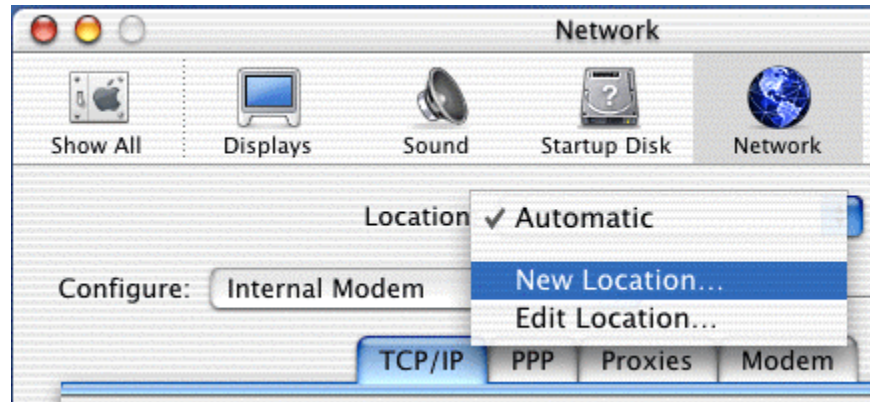
Choosing the Network Preferences

After selecting **System Preferences...**, from the previous screen, the **System Preferences** screen will be displayed. From the **System Preferences** screen, click on the **Network** icon.



Creating a New Location

After selecting the **Network** icon at the **System Preferences** screen, the **Network** screen will be displayed. Select **New Location** from the **Location** field.



Naming the New Location

After selecting **New Location** from the **Network** screen, the following screen will be displayed. In the field labeled **Name your new location:**, change the text from “Untitled” to “Westell.” Click on **OK**.



Selecting the Ethernet Configuration

After clicking on **OK** in the previous step, the **Network** screen will be displayed. The **Network** screen shows the settings for the newly created location. From the **Configure** field in the **Network** screen, select **Built-in Ethernet**. Click **Save**.

NOTE: Default settings for the Built-in Ethernet configuration are sufficient to operate the Router.

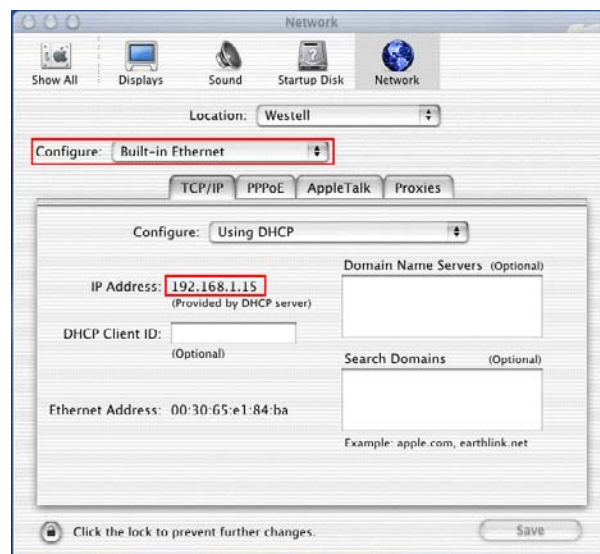


Checking the IP Connection

To verify that the computer is communicating with the Router, follow the instructions below.

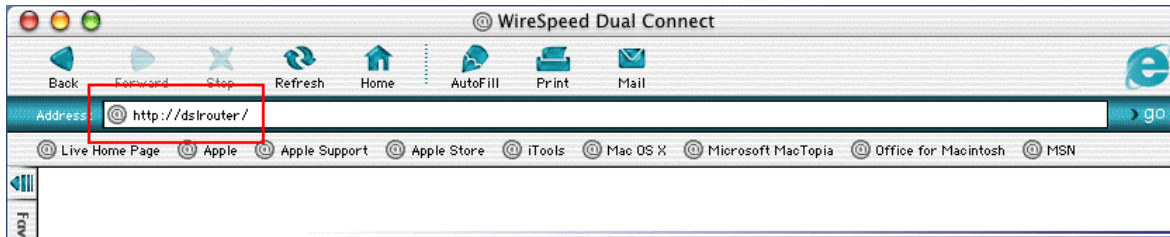
1. Go to the “**Apple**” icon in the upper right corner of the screen and select **System Preferences**.
2. From the **System Preferences** screen, click on the **Network** icon. The **Network** screen will be displayed.
3. From the **Configure** field in the **Network** screen, select **Built-in Ethernet**.
4. View the IP address field. An IP address that begins with **192.168.1** should be displayed.

NOTE: The DHCP server provides this IP address. If this IP address is not displayed, check the Router’s wiring connection to the PC. If necessary, refer to section 5 for installation instructions.

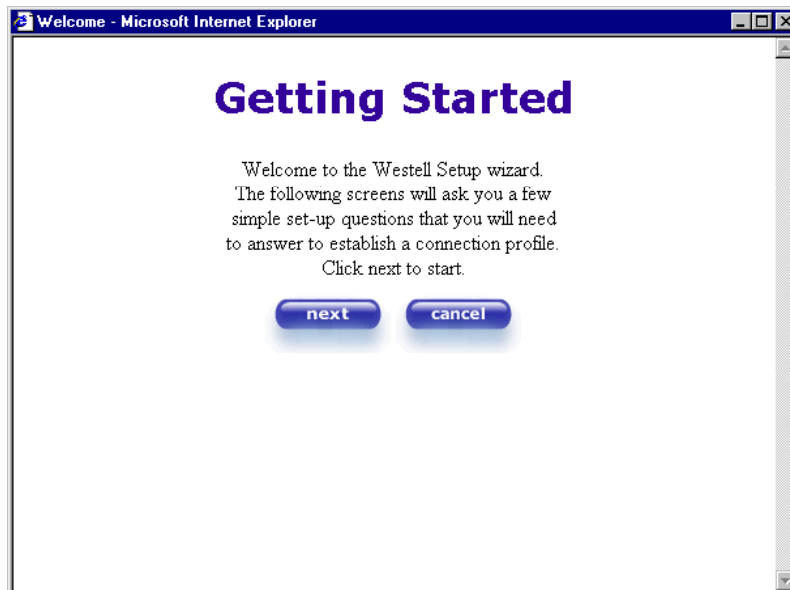


Creating a User Account

In the address window of your Internet Explorer web browser, type **Http://dslrouter/**. Press enter on your keyboard.



The **Getting Started** screen will be displayed. You may now set up your Account Profile. Refer to section 7 of this User Guide to configure your Router.

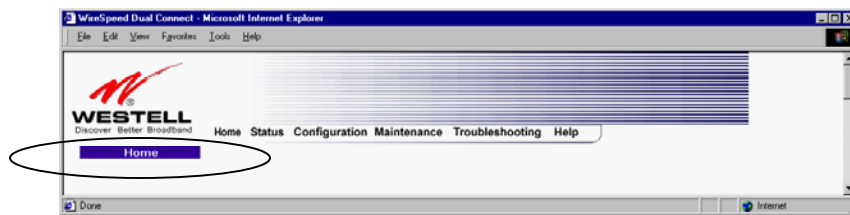


9. SETTING UP ADVANCED CONFIGURATION

STOP! The following section assumes that you have active DSL and Internet service.

The Advanced Configuration section of your Westell Router allows you to make changes to features like your firewall settings. The following sections will explain each feature of your Router and how to make changes to your configuration. If you are at a screen and need help, click on the **Help** button to learn more about that screen.

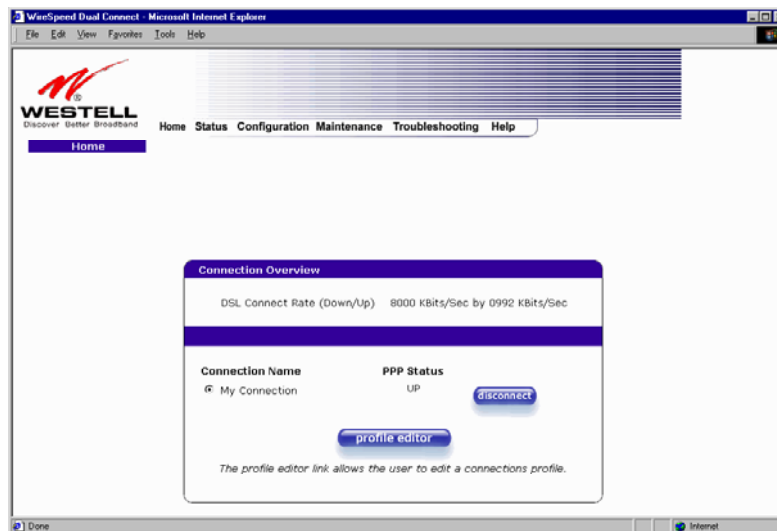
NOTE: As you navigate through the various screens of your Westell Router, the active page that you have selected will appear in the left-hand window of the homepage screen shown below.



9.1 Home

If you have set up your account profile and established your PPP session as discussed earlier in section 7, the following settings will be displayed when you click on your **Home** page. Click on **profile editor** to edit your connection profile.

NOTE: If you have created multiple account profiles, the selected radio button indicates the active account profile.

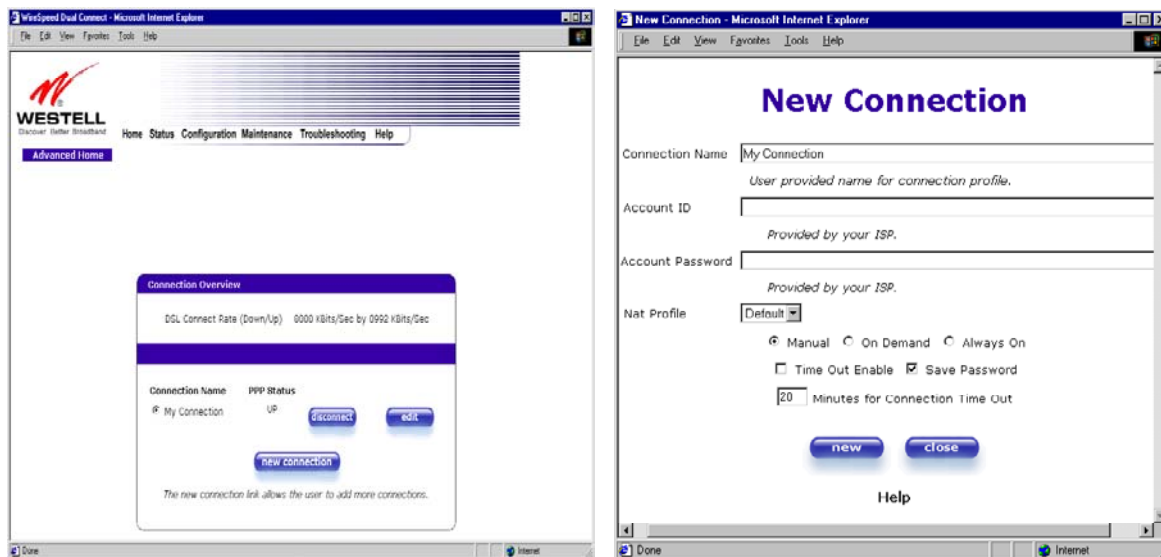


| | |
|---------------------|--|
| Connection Overview | Displays your DSL connection rate. |
| Connection Name | This Connection Name is from the connection profile that you established in section 7. |
| PPP Status | UP = PPP session established DOWN = No PPP session established. |

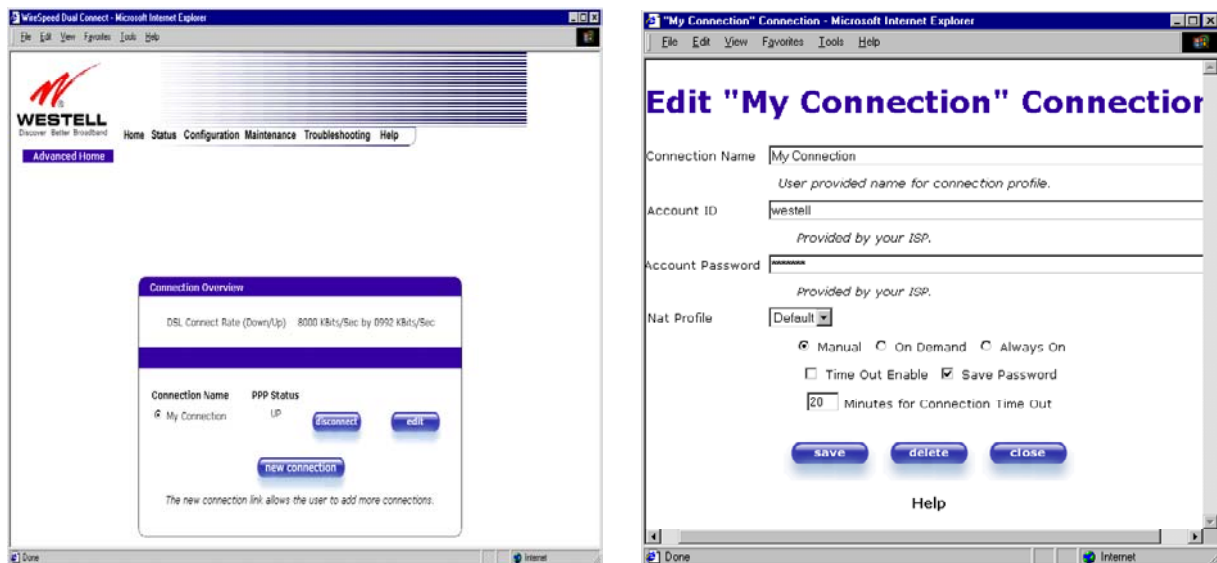
| | |
|--------------------|---|
| Connect/Disconnect | CONNECT = Establish a PPP session DISCONNECT = Disconnect a PPP session |
| Profile Editor | This allows you to make changes to the profile that you created in section 7. |

Adding Account Profiles

If you select the **Profile Editor** button from your **Home** page, the **Advanced Home** screen will appear, as show below. Click on the **new connection** button in the **Advanced Home** screen. The **New Connection** screen will appear. Enter your account parameters in the **New Connection** screen, as defined in section 7, to establish a new user profile and click on **new**. Next, click on **OK** in the pop-up screen to save your new connection. If you don't want to add a connection profile, click on **close** in the **New Connection** screen. You can store up to eight unique user profiles in your Router. Details on the **New Connection** screen are located at the end of this section.



If you select **Edit** from the **Advanced Home** screen, the **Edit "My Connection"** screen will appear. Follow the steps in the **Edit "My Connection"** screen to change your existing account profile, which you set up in section 7. If you don't want to change your account profile, click on **close**. Click on **delete** if you want to delete your connection profile.

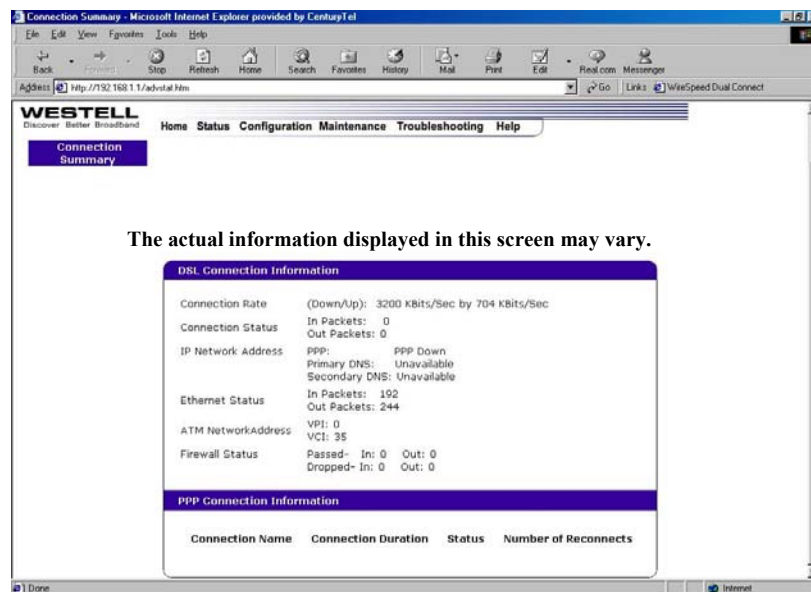


| | |
|---------------------------------|--|
| Connection Name | This field allows you to enter a new connection name of your choice (up to 64 characters). |
| Account ID | Use the same account ID that you used in section 7 if you are connecting to the same Service Provider. If you have multiple Service Providers, you can enter this information at this time. |
| Account Password | Use the same account password that you used in section 7 if you are connecting to the same Service Provider. If you have multiple Service Providers, you can enter this information at this time. |
| NAT Profile | Westell recommends that you use the Default parameter. |
| Manual | Factory default = MANUAL Selecting this feature allows you to manually establish your PPP session. |
| On Demand | Selecting this feature allows the Router to automatically re-establish your PPP session upon demand. |
| Always On | Selecting this feature allows the Router to establish an “always-on” PPP session if it goes down. |
| Time Out Enable | Selecting this feature allows you to enable the timeout parameter of your PPP session, which is set to a factory default of 20 minutes. |
| Save Password | Selecting this feature allows you to save the password for your new connection profile in your Router so that you will not have to re-enter it in case of a re-boot. |
| Minutes for Connection Time Out | This option allows you to specify the number of minutes that you want a PPP session to stay active before it is disconnected due to inactivity. (This feature works if you have selected the Time Out Enable feature explained above.) |

9.2 Status

Connection Summary

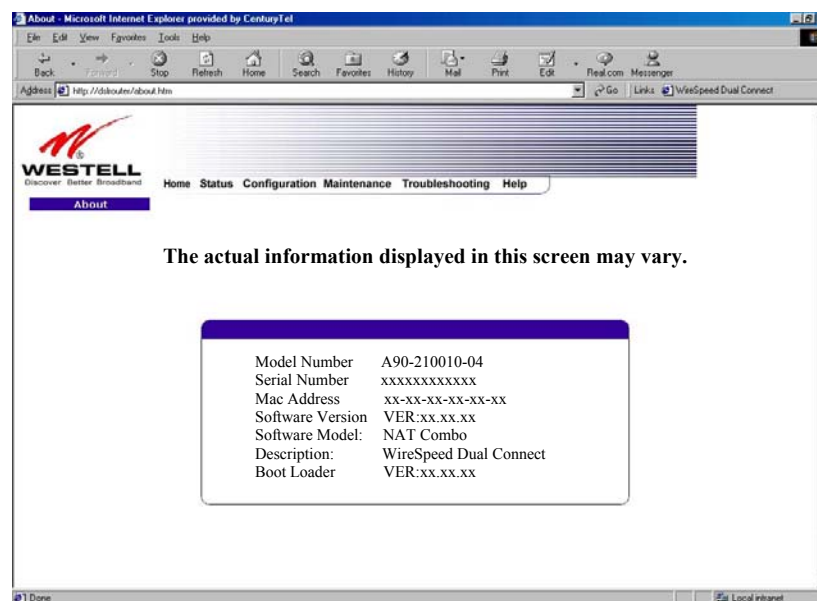
The following settings will be displayed if you select **Connection Summary** from the **Status** menu.



| DSL Connection Information | |
|----------------------------|---|
| Connection Rate | This field will let you know if you have a DSL Sync (UP/DOWN) and the DSL rate at which you are connected. |
| Connection Status | This field will display how much information was received (IN) or sent (OUT) in packets. |
| IP Network Address | PPP = An IP address identifies your device on the Internet Primary DNS = Provided by your Service Provider Secondary DNS = Provided by your Service Provider |
| Ethernet Status | This field will display your Ethernet information that was received (IN) or sent (OUT) in packets on your Ethernet port. |
| ATM Network Address | This field will display your VPI & VCI values, which are provided by your Internet Service Provider. |
| Firewall Status | This field will display your firewall traffic in packets. Passed: Monitors information traffic that was successfully received (IN) or transmitted (OUT) in packets. Dropped: Monitors information traffic that was not successfully received (IN) or transmitted (OUT) due to your firewall settings. |
| PPP Connection Information | |
| Connection Name | This is from the connection profile that you established in section 7. |
| Connection Duration | This field will display how long your PPP session has been connected. |
| Status | This field will display the status of your PPP session. UP=Connected DOWN=Disconnected |
| Number of Reconnects | This field will display the number of attempts that were made to establish a PPP session. |

About

The following settings will be displayed if you select **About** from the **Status** menu.

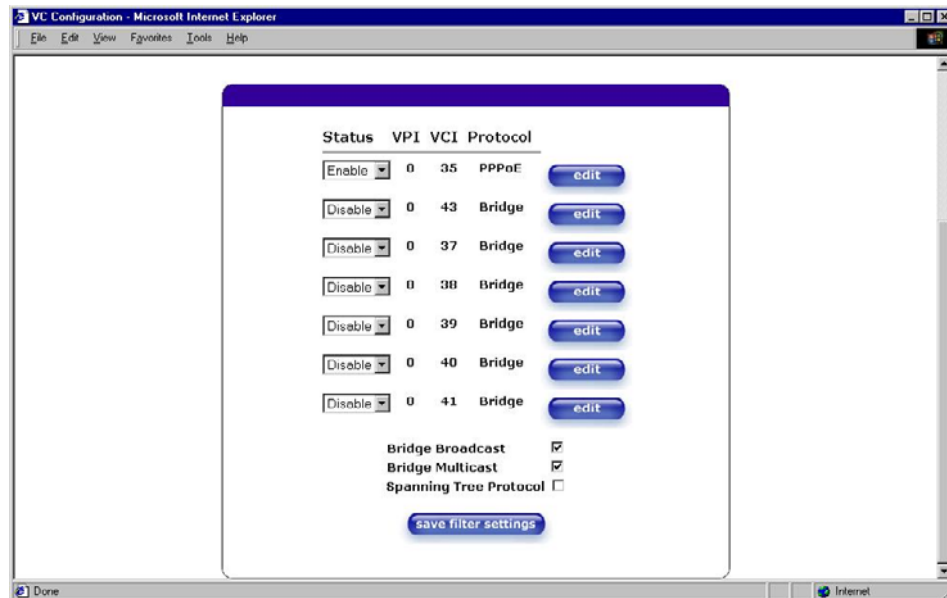


| | |
|------------------|--------------------------------------|
| Model Number | Router manufacturer's model number. |
| Serial Number | Router manufacturer's serial number. |
| MAC Address | MAC address of this device. |
| Software Version | Version of Application Software. |
| Software Model | Router application type. |
| Description | Product description. |
| Boot Loader | Version of boot loader software |

9.3 Configuration

VC Configuration

The following settings will be displayed if you select **VC Configuration** from the **Configuration** menu.



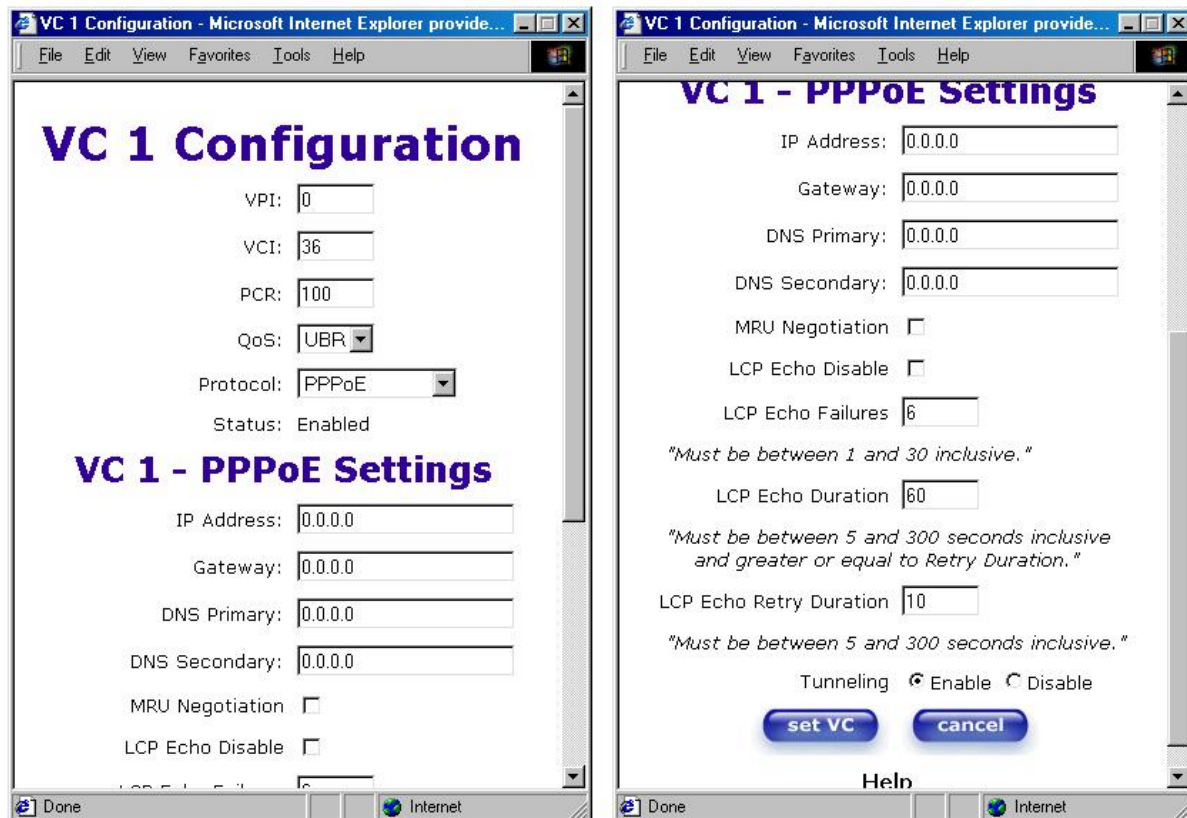
NOTE: Westell strongly recommends that you do not change any values in this section. If you experience any problems, please reset your Router via the external hardware re-set button or via the procedure defined under the **Maintenance** menu.

| | |
|------------------------|---|
| Status | Allows you to enable or disable your VC (Virtual Connection) |
| VPI | Displays the VPI (Virtual Path Indicator) value for a particular VC, which is defined by your Service Provider. |
| VCI | Displays the VCI (Virtual Channel Indicator) value for a particular VC, which is defined by your Service Provider. |
| Protocol | Displays the Protocol for each VC, which is specified by your Service Provider. NOTE: The configuration specified by your Service Provider will determine which Protocols are available to you. PPPoA = Point to Point Protocol over ATM (Asynchronous Transfer Mode) PPPoE = Point to Point Protocol over Ethernet Bridge = Bridge Protocol Classical IPoA = Internet Protocol over ATM (Asynchronous Transfer Mode). This is an ATM encapsulation of the IP protocol. |
| Bridge Broadcast | Factory Default = CHECKED When this setting is CHECKED, the Router will allow Broadcast IP packets to/from the WAN. When this setting is NOT CHECKED, the router will block Broadcast IP packets to/from the WAN. This setting is only valid if one of the Virtual Channels is configured for Bridge mode. |
| Bridge Multicast | Factory Default = CHECKED When this setting is CHECKED, the Router will allow Multicast IP packets to/from the WAN. When this setting is NOT CHECKED, the Router will block Multicast IP packets to/from the WAN. This setting is only valid if one of the Virtual Channels is configured for Bridge mode. |
| Spanning Tree Protocol | Factory Default = DISABLED Spanning Tree Protocol is a link management protocol that provides path redundancy while preventing undesirable loops in the network. For Ethernet network to function properly, only one active path can exist between two stations. When ENABLED, two bridges are used to interconnect the same two computer network segments. Spanning Tree Protocol will allow the bridges to exchange information so that only one of them will handle a given message that is being sent between two computers within the network. |

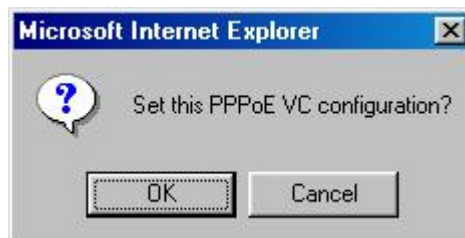
The following settings will be displayed if you select **edit** from your **VC Configuration** menu on any of your existing VC (Virtual Connections) settings. If you change any of your existing VC settings, click on **Set VC**.

NOTE: Westell strongly recommends that you do not change any values in this section. If you experience any problems, please reset your Router via the external hardware re-set button or via the procedure defined under the **Maintenance** menu.

This screen has been divided into two parts for illustrative purposes.



If you have made any changes to your VC settings, you need to save them. To save the new VC settings, click on **OK** when asked **Set this PPPoE VC configuration?** If you click on **cancel**, the new VC settings will not be saved.

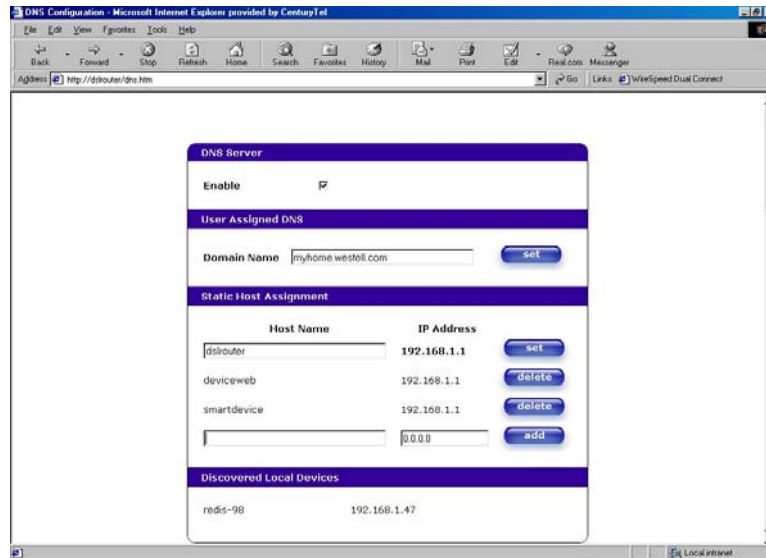


| VC 1 Configuration | |
|-------------------------|--|
| VPI | This setting allows you to change your VPI (Virtual Path Indicator) value for a particular VC, which is defined by your Service Provider. |
| VCI | This setting allows you to change your VCI (Virtual Channel Indicator) value for a particular VC, which is defined by your Service Provider. |
| PCR | <p>Factory Default = 100%</p> <p>Peak Cell Rate (PCR)-The maximum rate at which cells can be transmitted across a virtual circuit, specified in cells per second and defined by the interval between the transmission of the last bit of one cell and the first bit of the next.</p> <p>This value is a percentage of the current data rate. 100 allows this VC to use 100% of the available bandwidth. 80 allows this VC to use 80% of the available bandwidth.</p> |
| QoS | <p>Quality of Service, which is determined by your Service Provider.</p> <p>CBR = Constant Bit Rate UBR = Unspecified Bit Rate VBR = Variable Bit Rate</p> |
| Protocol | <p>The Protocol for each VC, which is specified by your Service Provider.</p> <p>PPPoA = Point to Point Protocol over ATM (Asynchronous Transfer Mode) PPPoE = Point to Point Protocol over Ethernet Bridge = Bridge Protocol Classical IPoA = Internet Protocol over ATM (Asynchronous Transfer Mode). This is an ATM encapsulation of the IP protocol.</p> |
| Status | The protocol status. |
| VC x PPPoE Settings | |
| IP Address | Displays the IP network address that your modem is on. |
| Gateway | Displays the router IP Gateway address |
| DNS Primary | Provided by your Service Provider |
| DNS Secondary | Provided by your Service Provider |
| MRU Negotiation | <p>Factory Default = DISABLED</p> <p>If ENABLED, the Maximum Received Unit (MRU) would enforce MRU negotiations. (NOTE: enable this option only at your Internet Service Provider's request.)</p> |
| Tunneling | <p>Factory Default = ENABLE</p> <p>If ENABLED, this option allows PPP traffic to be bridged to the WAN. This feature allows you to use a PPPoE shim on the host computer to connect to the Internet Service Provider, by bypassing the Router's capability to do this.</p> |
| LCP Echo Disable | <p>Factory Default = ENABLE</p> <p>If checked, this option will disable the modem LCP Echo transmissions.</p> |
| LCP Echo Failures | Indicates number of continuous LCP echo non responses received before the PPP session is terminated. |
| LCP Echo Duration | Indicates the interval between LCP Echo transmissions with responses. |
| LCP Echo Retry Duration | Indicates the Interval between LCP Echo after no response. |

NOTE: The values for IP Address, Gateway, DNS Primary, and DNS Secondary are all "Override of the value obtained from the PPP connection," They default to "0.0.0.0," in which case the override is ignored. Westell recommends that you do not change these values unless your Internet Service Provider instructs you to do so.

DNS Configuration

The following settings will be displayed if you select **DNS Configuration** from the **Configuration** menu.



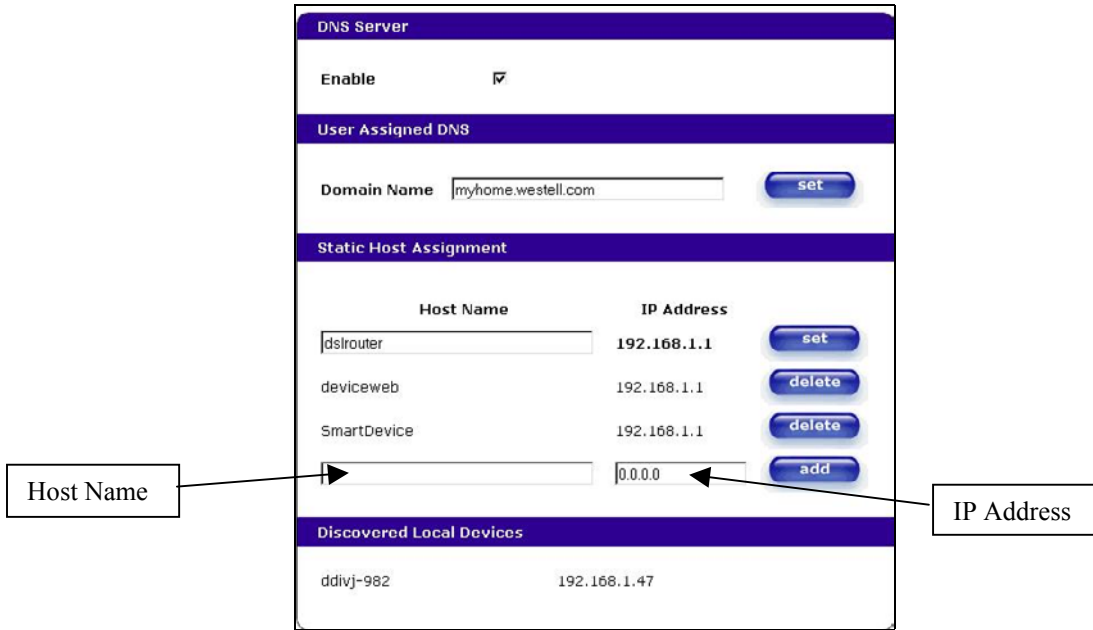
The screenshot shows the 'DNS Configuration' page in a web browser. The page has a blue header with the title 'DNS Configuration - Microsoft Internet Explorer provided by CenturyTel'. Below the header is a navigation bar with buttons for Back, Forward, Stop, Refresh, Home, Search, Favorites, History, Mail, Print, Edit, Real.com, and Messenger. The main content area is divided into several sections:

- DNS Server**: A section with an 'Enable' checkbox that is checked.
- User Assigned DNS**: A section with a 'Domain Name' input field containing 'myhome.westell.com' and a 'set' button.
- Static Host Assignment**: A section with a table for host names and IP addresses. The table has columns for 'Host Name' and 'IP Address'. The first row shows 'distributor' with IP '192.168.1.1' and a 'set' button. The second row shows 'deviceweb' with IP '192.168.1.1' and a 'delete' button. The third row shows 'smartdevice' with IP '192.168.1.1' and a 'delete' button. There is also an 'add' button at the bottom of the table.
- Discovered Local Devices**: A section with a table showing discovered devices. The first row shows 'redis-98' with IP '192.168.1.47'.

| DNS Server | |
|--|---|
| Enable | Factory Default = CHECKED Displays the status of the DNS Server. If you disable this feature, the router will not automatically resolve the host name. |
| User Assigned DNS | |
| Domain Name NOTE: Some ISP's may require the name for identification purposes. | This field allows you to enter a Domain Name for your Router. To add a Domain Name, in the field under User Assigned DNS, type in your new domain name and click Set . |
| Static Host Assignment | |
| Host Name | This field allows you to enter a HOST name for your Router. To add a new Host name, in the field under Static Host Assignment, type in the Host Name and the IP address and click Set . |
| IP Address | Displays the IP address that is assigned to the Host Name. |
| Discover Local Devices | |
| This field displays a list of the computers on the LAN that were assigned a DHCP Address. The computer name, MAC address, and IP address of each discovered device is displayed. | |

Adding a New Host Name and IP Address

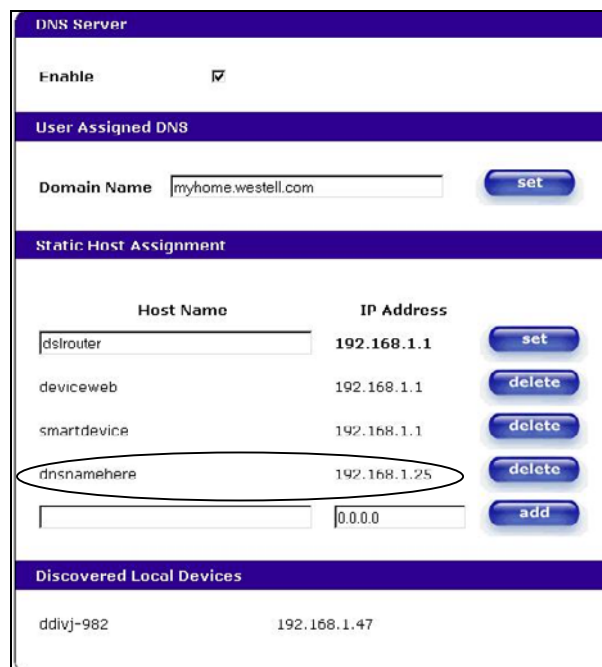
If you want to add a new Host Name and IP address to your DNS server, enter your Router's **Host Name** and **IP Address** in the fields provided in the **Static Host Assignment** section. Click on **add**.



The screenshot shows the DNS Server configuration page. The 'Static Host Assignment' section contains a table with columns 'Host Name' and 'IP Address'. The 'Host Name' field is highlighted with a box labeled 'Host Name' and the 'IP Address' field is highlighted with a box labeled 'IP Address'.

| Host Name | IP Address | |
|-------------|-------------|--------|
| dslrouter | 192.168.1.1 | set |
| deviceweb | 192.168.1.1 | delete |
| SmartDevice | 192.168.1.1 | delete |
| | 0.0.0.0 | add |

If you clicked on **add**, the following screen will be displayed, showing that the **Host Name** and **IP Address** have been added.

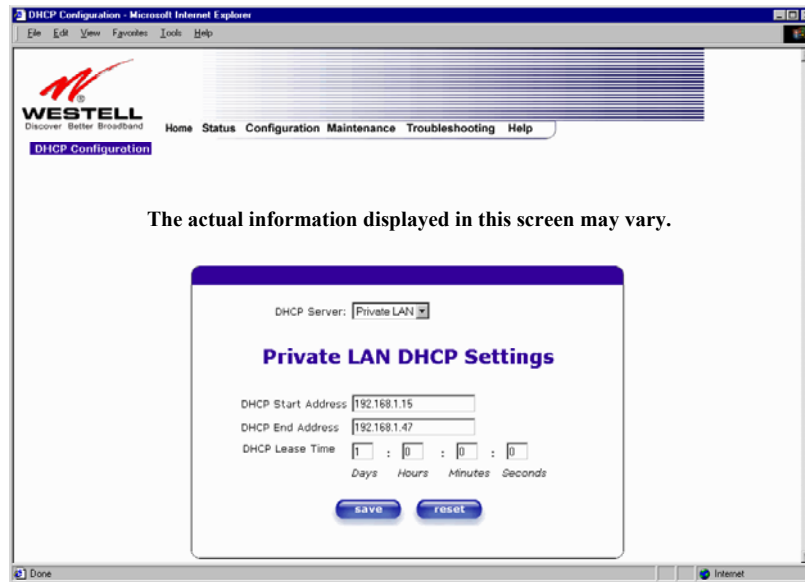


The screenshot shows the DNS Server configuration page after adding a new host. The 'Static Host Assignment' section contains a table with columns 'Host Name' and 'IP Address'. The new host 'dnsnamehere' with IP '192.168.1.25' is highlighted with an oval.

| Host Name | IP Address | |
|-------------|--------------|--------|
| dslrouter | 192.168.1.1 | set |
| deviceweb | 192.168.1.1 | delete |
| smartdevice | 192.168.1.1 | delete |
| dnsnamehere | 192.168.1.25 | delete |
| | 0.0.0.0 | add |

DHCP Configuration

The following settings will be displayed if you select **DHCP Configuration** from the **Configuration** menu.



| | |
|--------------------|---|
| DHCP Server | <p>This setting allows the ADSL router to automatically assign IP addresses to local devices connected on the LAN. Westell advises setting this to enabled for the private LAN.</p> <p>Off = DHCP Server is disabled</p> <p>Private LAN = DHCP addresses will be saved into the Private LAN configuration.</p> <p>Public LAN = DHCP addresses will be saved into the Public LAN configuration. This option is only available if the Public LAN DHCP server is enabled.</p> <p>NOTE: If you enable Public LAN, you must enter your values in the fields. Your Internet service provider may support dynamic setting of the Private LAN values, however, IP assignment will not overwrite the default Private LAN values.</p> |
| DHCP Start Address | <p>Factory Default = 192.168.1.15</p> <p>This field displays the first IP address that the DHCP server will provide. The DHCP Start Address must be within the IP address and lower than the DHCP End Address. You may use any number from 0 to 254 in this address.</p> |
| DHCP End Address | <p>Factory Default = 192.168.1.47</p> <p>This field displays the last IP address that the DHCP server will provide. The DHCP End Address must be within the IP address and higher than the DHCP Start Address. You may use any number from 0 to 254 in this address.</p> |

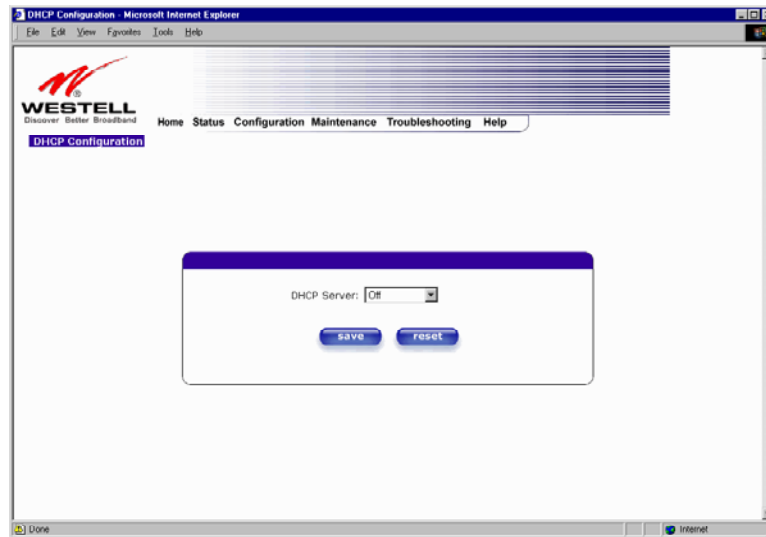
| | |
|-----------------|--|
| DHCP Lease Time | <p>Factory Default = 01:00:00:00</p> <p>Displays the amount of time the provided addresses will be valid, after which the DHCP client will usually re-submit a request.</p> <p>NOTE: DHCP Lease Time is displayed in the format (dd:hh:mm:ss)*. (This value must be greater than 10 seconds.) The default = 01:00:00:00. Seconds must be between 0 and 59, minutes must be between 0 and 59, and hours must be between 0 and 23.</p> <p>*(dd = days, hh = hours, mm = minutes, ss = seconds)</p> |
|-----------------|--|

Disabling the DHCP Server

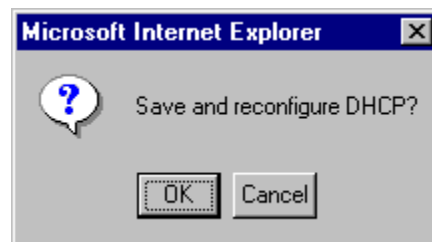
If you click on the pull-down arrow at **DHCP Server:**, a list of options will be displayed. If you want to disable your DHCP server, select **Off** from the **DHCP Server** pull-down arrow (see the screen below). The next screen will be displayed immediately.



If you selected **Off** at **DHCP Server:**, the following screen will be displayed immediately. Click on **save** to save the **DHCP Server** setting. Click on **save**.

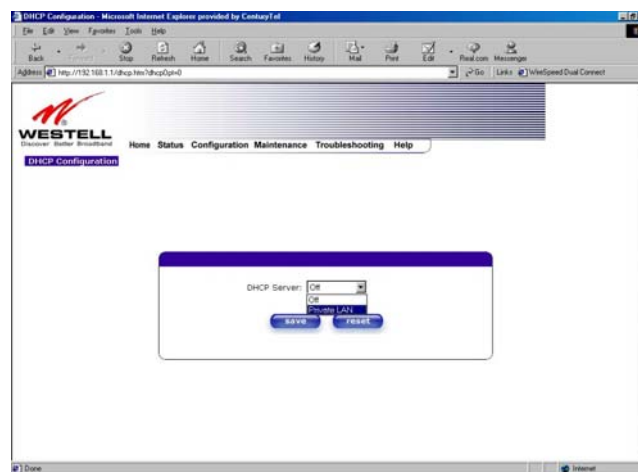


If you clicked on **save** in the preceding **DHCP Configuration** screen, the following pop-up screen will appear. Click on **OK**.

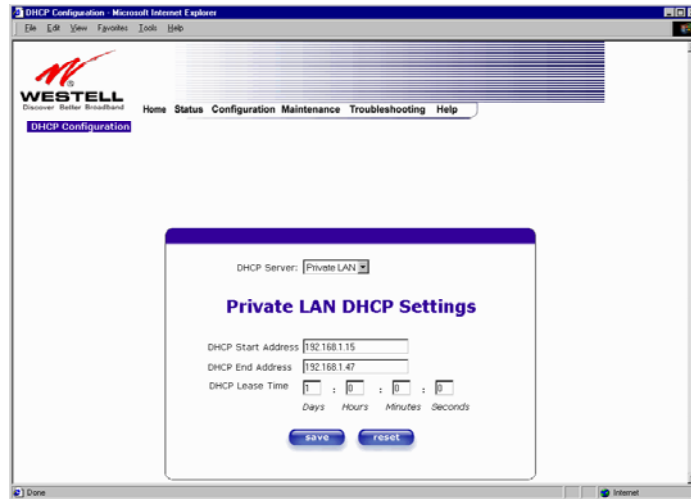


Enabling the DHCP Server

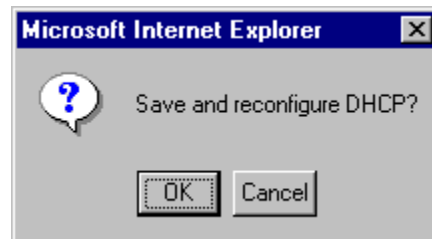
If you want to enable your DHCP Server settings, select **Private LAN** at the **DHCP Server** pull-down arrow.



If you select **Private LAN**, the following screen will be displayed. Click on **save** to save your DHCP Server setting. If you click on **reset**, your DHCP Server setting will be reset to factory default. (Private LAN is the factory default for DHCP Server.)



If you clicked on **save** in the preceding **DHCP Configuration** screen, the following pop-up screen will appear. Click on **OK**.



Private LAN Configuration

The following settings will be displayed if you select **Private LAN Configuration** from the **Configuration** menu. (Private LAN is the default configuration for this Router.)

NOTE: Private LAN allows you to set up a network behind your Router.

If you change the settings in this screen, click on **save**. If you click on **reset**, the changes will not take affect.

If you made changes and clicked on **save**, the following pop-up screen will be displayed. Click on **OK**. This will save your **Private LAN Configuration** settings. If you click **Cancel**, your new settings will not take affect.



| | |
|--------------------------------|--|
| Private LAN DHCP Server Enable | Default = CHECKED If this box is CHECKED, it enables DHCP addresses to be served from the Private LAN pool. |
| Private LAN Enable | Default = CHECKED If this box is CHECKED, it enables the addresses from the Private LAN to use the NAT interface. |
| Modem IP Address | Displays the Router's IP address |
| Subnet Mask | Displays the Subnet Mask, which determines which portion of an IP address is controlled by the network, and which portion is controlled by the host. |
| DHCP Start Address | Displays the first IP address that the DHCP server will provide. |
| DHCP End Address | Displays the last IP address that the DHCP server will provide. |
| DHCP Lease Time | Displays the amount of time the provided addresses will be valid, after which the DHCP client will usually re-submit a request. |

NOTE: DHCP Lease Time is displayed in the following format: (dd:hh:mm:ss)* (This value must be greater than 10 seconds.) The default = 01:00:00:00. Seconds must be between 0 and 59, minutes must be between 0 and 59, and hours must be between 0 and 23.
*(dd = days, hh = hours, mm = minutes, ss = seconds).

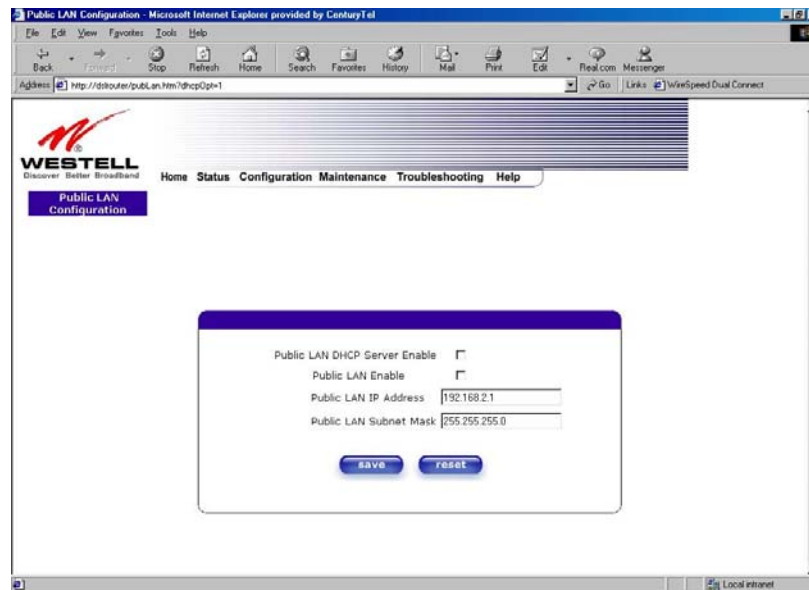
If the settings you have entered in the **Private LAN Configuration** screen are incorrect, the following warnings messages may be displayed via pop-up screens. If this occurs, check the settings in the **Private LAN Configuration** screen.

| Warning Message | Check Private LAN DHCP Settings |
|--|---|
| Start Address is not part of the Subnet | Check the value in the DHCP Start Address field |
| End Address is not part of the Subnet | Check the value in the DHCP End Address field |
| End Address is below the Start Address | Check the value in the DHCP End Address field |
| Lease time must be greater than 10 seconds | Check the values in the DHCP Lease Time fields |
| Seconds must be between 0 and 53 | Check the Seconds value in the DHCP Lease Time field |
| Minutes must be between 0 and 59 | Check the Minutes value in the DHCP Lease Time field |
| Hours must be between 0 and 23 | Check the Hours value in the DHCP Lease Time field |

Public LAN Configuration

The following screen will be displayed if you select **Public LAN Configuration** from the **Configuration** menu.

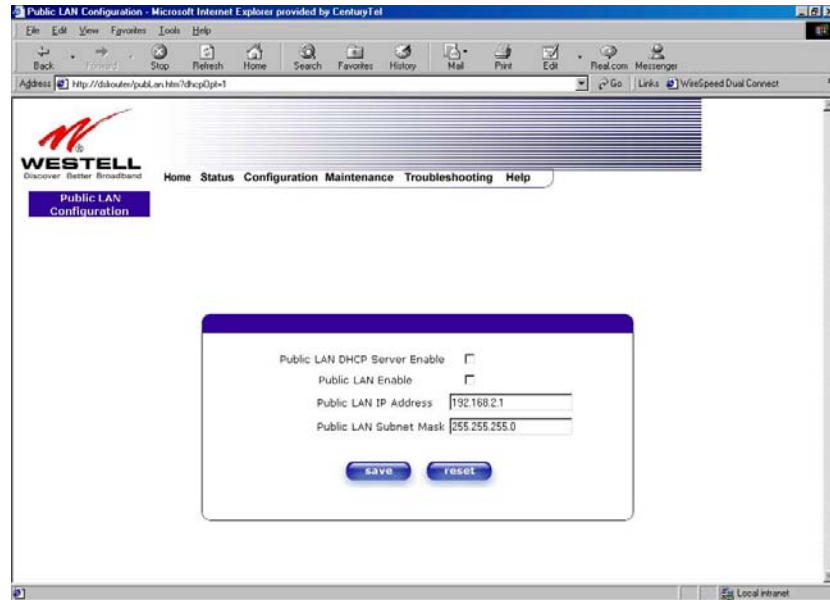
NOTE: The Public LAN feature, if available from your service provider, allows the Router to use LAN IP addresses that are accessible from the WAN. Public LAN allows your computer to have global address ability. To utilize the Public LAN feature on your Router, your ISP must support Public LAN and Static IP. Contact your ISP for details.



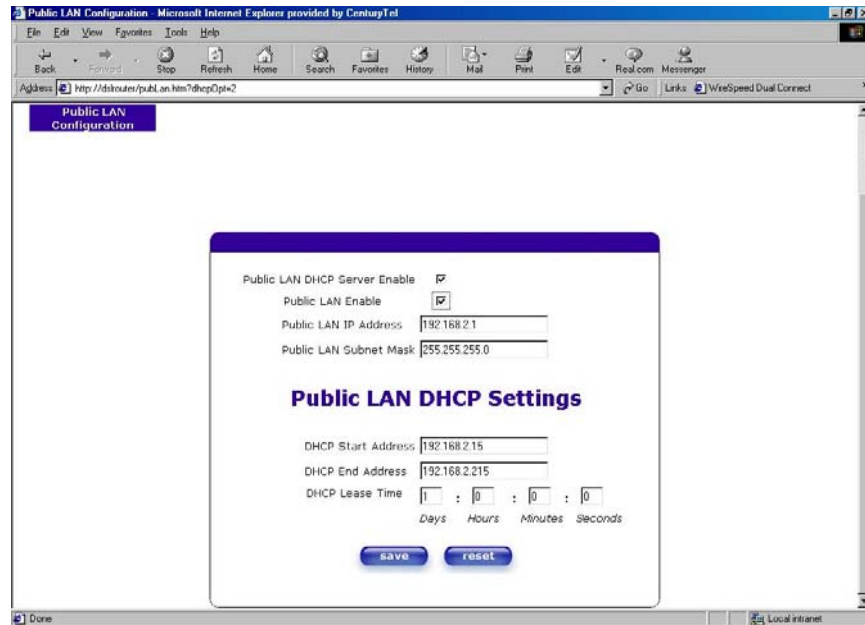
| | |
|-------------------------------|--|
| Public LAN DHCP Server Enable | Default = NOT CHECKED If this box is CHECKED, it enables DHCP addresses to be served from the Public LAN pool. |
| Public LAN Enable | Default = NOT CHECKED If this box is CHECKED, it enables the addresses from the Public LAN to bypass the NAT interface. |
| Public LAN IP Address | Provides a Public IP Address if the service provider does not automatically provide one. |
| Public LAN Subnet Mask | Provides a Public Subnet Mask if the service provider does not automatically provide one. |

If you clicked on the **Public LAN DHCP Server Enable** box, the following screen will be displayed. Click on the **Public LAN Enable** box to enable Public LAN.

NOTE: By enabling the Public DHCP Server, you automatically disable the Private LAN DHCP Server on your Router.



The following screen shows the **Public LAN Enable** box selected. Click on **save**.



If you selected **Public LAN Enable**, or if you made other changes in the **Public LAN Configuration** screen and clicked on **save**, the following pop-up screen will be displayed. Click on **OK** to save the new settings. If you click on **Cancel**, your new settings will not take affect.



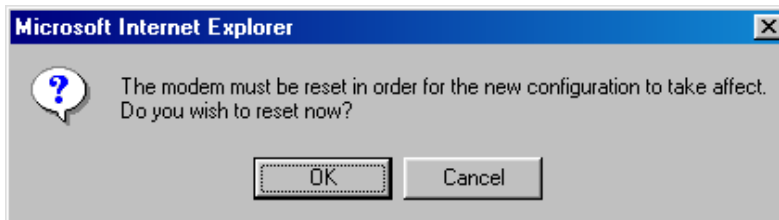
NOTE: DHCP Lease Time is displayed in the following format: (dd:hh:mm:ss)*. (This value must be greater than 10 seconds.) The default = 01:00:00:00. Seconds must be between 0 and 59, minutes must be between 0 and 59, and hours must be between 0 and 23.

*(dd = days, hh = hours, mm = minutes, ss = seconds).

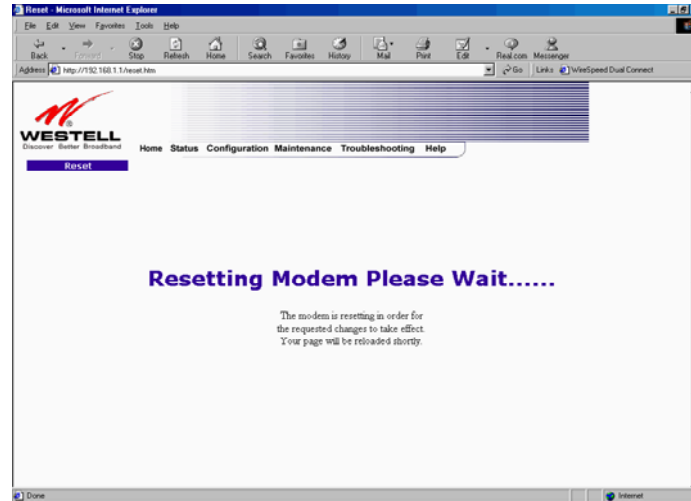
If the settings you have entered in the **Public LAN Configuration** screen are incorrect, the following warnings messages may be displayed via pop-up screens. If this occurs, check settings in the **Public LAN Configuration** screen.

| Warning Message | Check Public LAN DHCP Settings |
|--|---|
| Start Address is not part of the Subnet | Check the value in the DHCP Start Address field |
| End Address is not part of the Subnet | Check the value in the DHCP End Address field |
| End Address is below the Start Address | Check the value in the DHCP End Address field |
| Lease time must be greater than 10 seconds | Check the values in the DHCP Lease Time fields |
| Seconds must be between 0 and 53 | Check the Seconds field at DHCP Lease Time |
| Minutes must be between 0 and 59 | Check the Minutes field at DHCP Lease Time |
| Hours must be between 0 and 23 | Check the Hours field at DHCP Lease Time |

If you clicked on **OK** in the **Load new Public LAN configuration?** pop-up screen, the following pop-up screen will be displayed. Click on **OK**. This will allow the modem to be reset, and the new configuration will take affect.



If you clicked on **OK** in the preceding screen, the following screen will be displayed. This screen shows that the Router is being reset.



Single Static IP Configuration

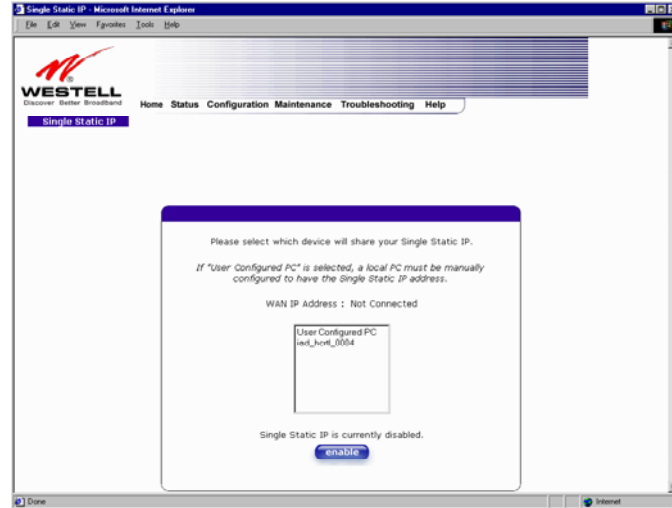
The following settings will be displayed if you select **Single Static IP Configuration** from the **Configuration** menu. See the screens in the following sections.

STOP: Static NAT must be disabled before you can enable **Single Static IP**. To disable Static NAT, select **Service Configuration** from the **Configuration** menu. Next, click on the **static NAT** button. Select the device from the **Static NAT Device** pull-down menu and click on **disable**. Return to Single Static IP Configuration by selecting **Single Static IP Configuration** from the **Configuration** menu.

Enabling Single Static IP

To enable Single Static IP, select the device that will share your Single Static IP address from the screen below. Click on **enable**.

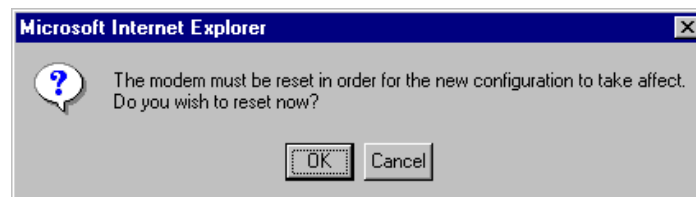
NOTE: The Single Static IP Configuration screen allows you to select a device on your LAN that will share your Single Static IP address.



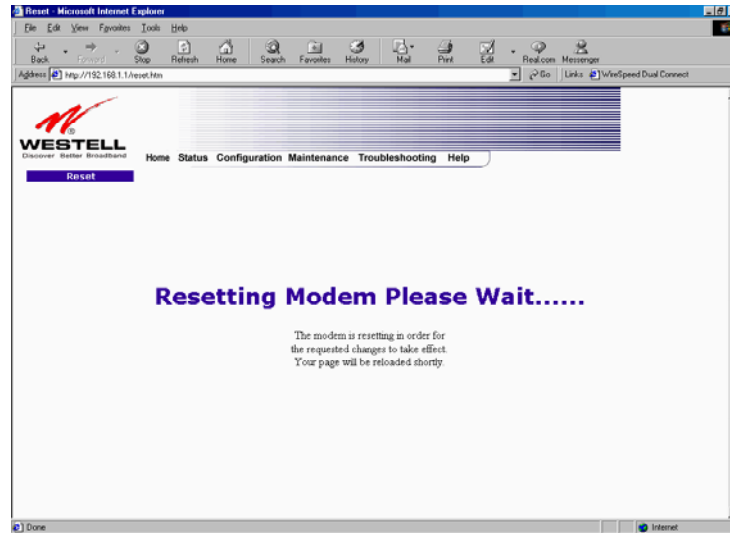
If you clicked on **enable**, the following pop-up screen will appear. Click on **OK** to enable this device for Single Static IP. Click on **Cancel** to abort.



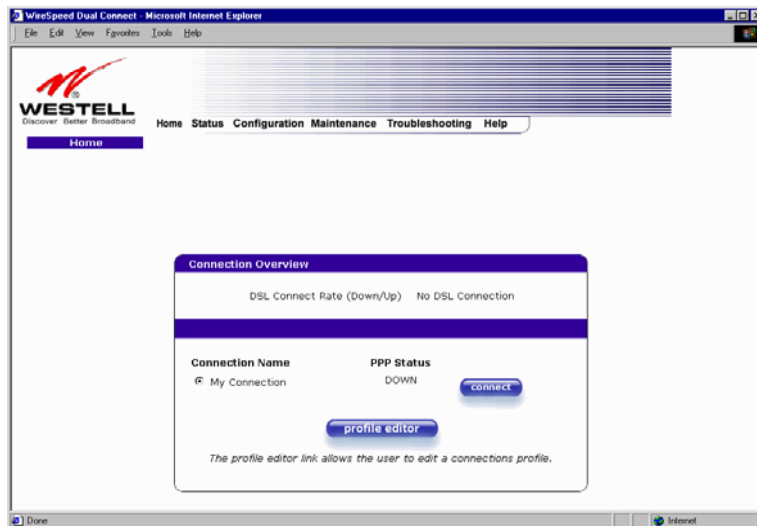
If you clicked on **OK** in the pop-up screen, the following pop-up screen will appear. The Router must be reset in order for the new configuration to take affect. Click on **OK**.



If you clicked on **OK** in the preceding screen, the following screen will be displayed. This screen shows that the Router is being reset.



You must now re-establish your PPP session. To do this you must first go to your homepage and click on **connect**.



Next select **Single Static IP** from the **Configuration** menu, and confirm that the Single Static IP is currently enabled for the device you selected.

Disabling Single Static IP

The following screen displays that Single Static IP is enabled for device you selected. Click on **disable** if you want to disable the Single Static IP for this device.

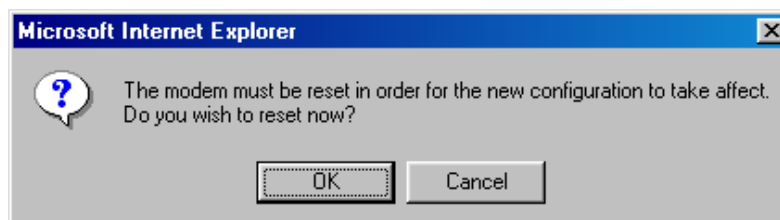


STOP! After you enable Single Static IP, you must reboot your computer and establish your PPP session.

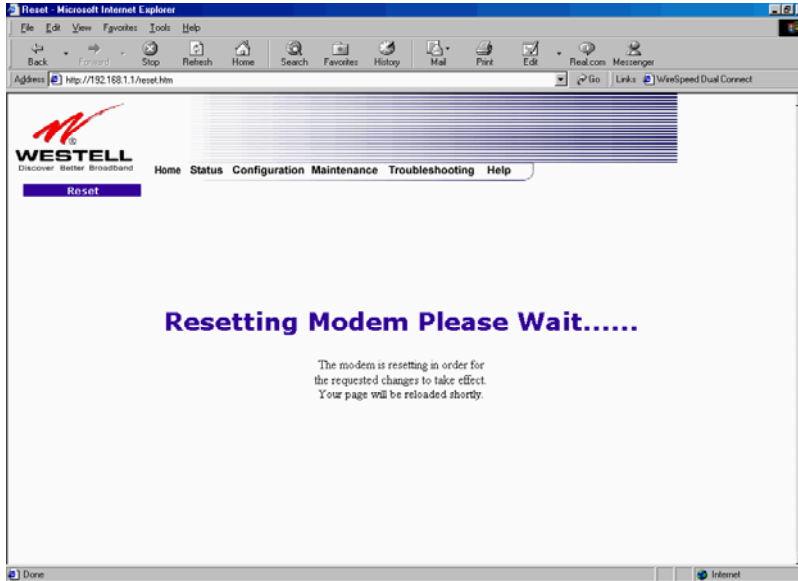
If you clicked on **disable** in the preceding screen, the following pop-up screen will be displayed. Click on **OK**.



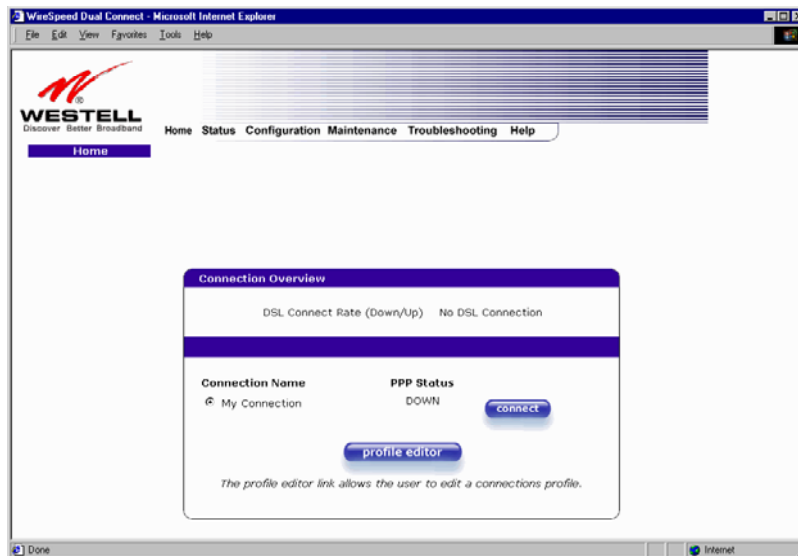
If you clicked on **OK** in the **Disable IP Passthrough?** screen, the following pop-up screen will be displayed. Click on **OK**. This will allow the modem to be reset, and the new configuration will take affect.



If you clicked on **OK** in the preceding screen, the following screen will be displayed. This screen shows that the Router is being reset.



You must now re-establish your PPP session. Go to your homepage and click on **connect**.



Service Configuration

The following settings will be displayed if you select **Service Configuration** from the **Configuration** menu.

Westell has developed an extensive list of NAT services and you may select any service from this list. By selecting your specific NAT service and setting up a NAT profile, you will ensure that the appropriate ports on your Router are open and that the required application traffic can pass through your LAN. For a list of supported services, please go to section 9.8 (NAT Services).

Current Profile:

Service Name:

"" Denotes Custom Service

Service Name:

| | |
|-----------------|--|
| Current Profile | Displays the NAT (Network Address Translation) services that you have selected. |
| Service Name | Drop down selection menu of NAT (Network Address Translation) service you can select to configure your Router. |

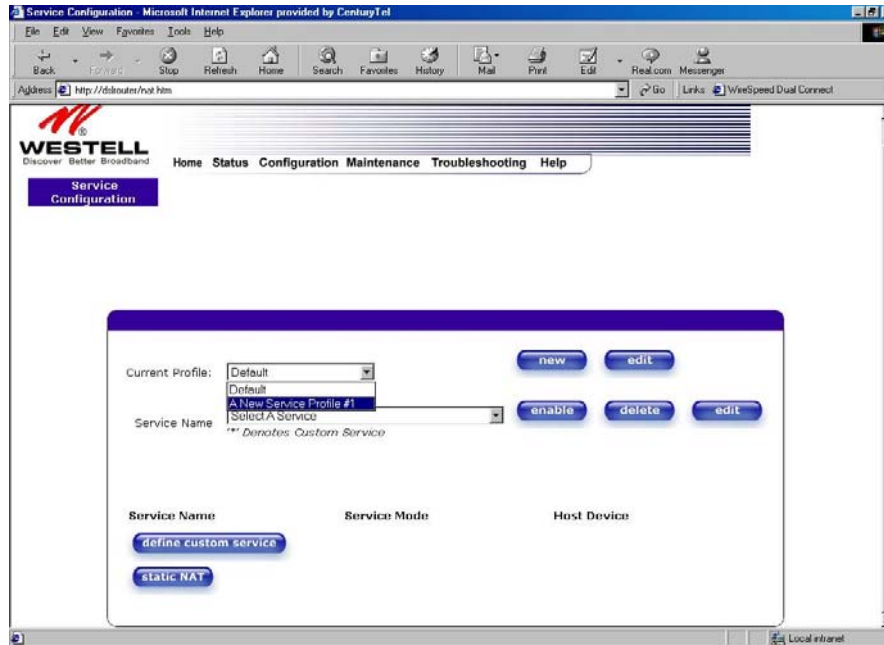
Creating a New Service Profile

If you select **new** from the preceding **Service Configuration** screen, the **Create new Service Profile?** pop-up screen will be displayed. Click on **OK** to begin creating your new NAT profile. Click **Cancel** if you do not want to create a new NAT profile.

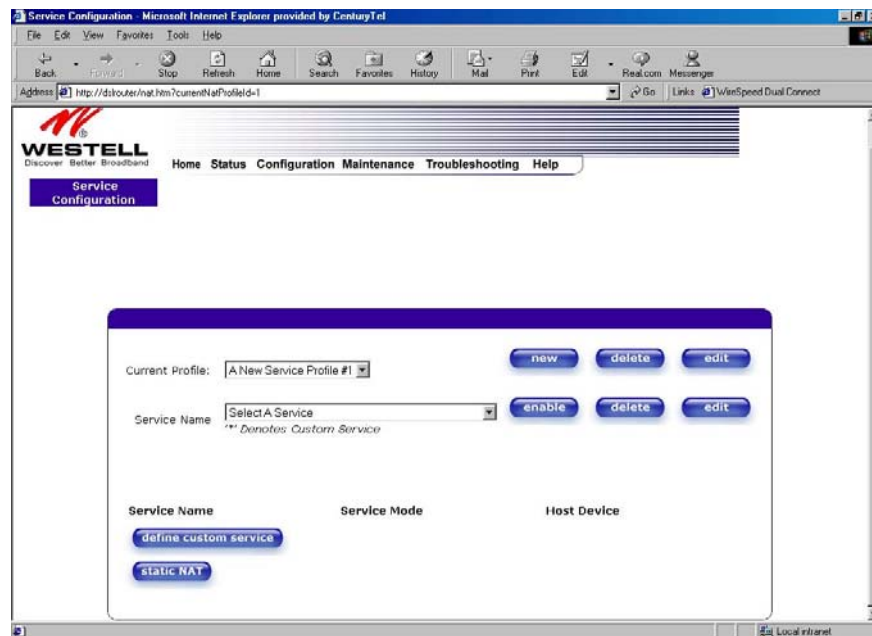


If you clicked on **OK**, the following screen will be displayed. Select **“A New Service Profile #1”** from the **Current Profile** pull-down arrow.

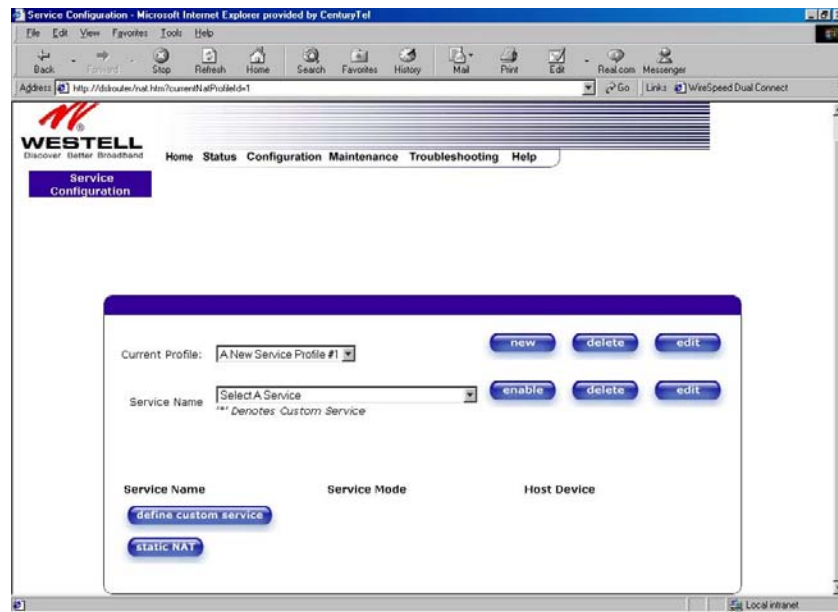
NOTE: You may create up to four NAT profiles and attach an unlimited number of services to each profile.



If you selected “A New Service Profile #1” from the **Current Profile** pull-down arrow, the screen below will be displayed. This screen shows that you have chosen to create a new NAT profile. You may create up to four NAT profiles and attach an unlimited number of services to each profile.



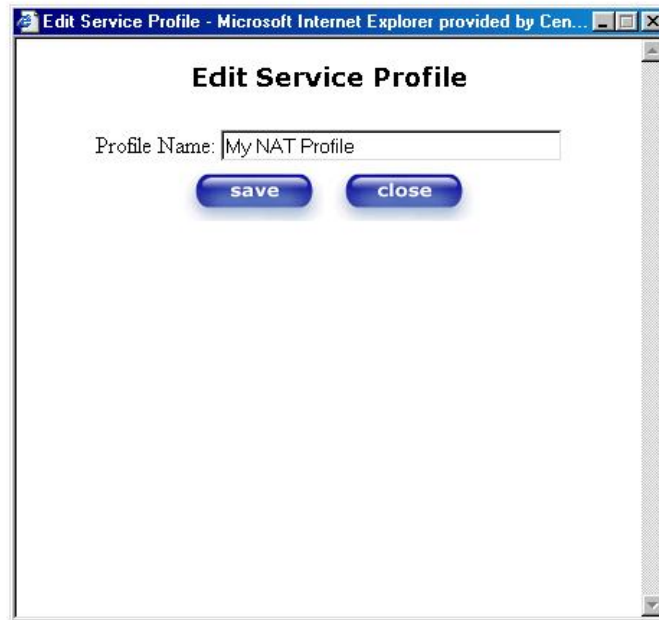
Editing a Service Profile



Once you have created a Service profile, you may edit the profile. If you select **edit** from the **Service Configuration** screen, the following screen will be displayed. By selecting the **edit** feature, you can make changes to your Service profile by adding or deleting NAT applications that will work with your Router. Type your new NAT profile name (e.g., My NAT Profile) in the field labeled **Profile Name**.



The following screen shows that a new profile name called '**My NAT Profile**' was entered into the **Profile Name** field. If you want save the new NAT profile, click on **save**. If you do not want to save the new NAT profile, click on **close**.



If you clicked on **save** in the **Edit NAT Profile** screen, the following pop-up screen will be displayed. Click on **OK** to save your new profile settings. If you click on **Cancel**, your new profile settings will not be saved.

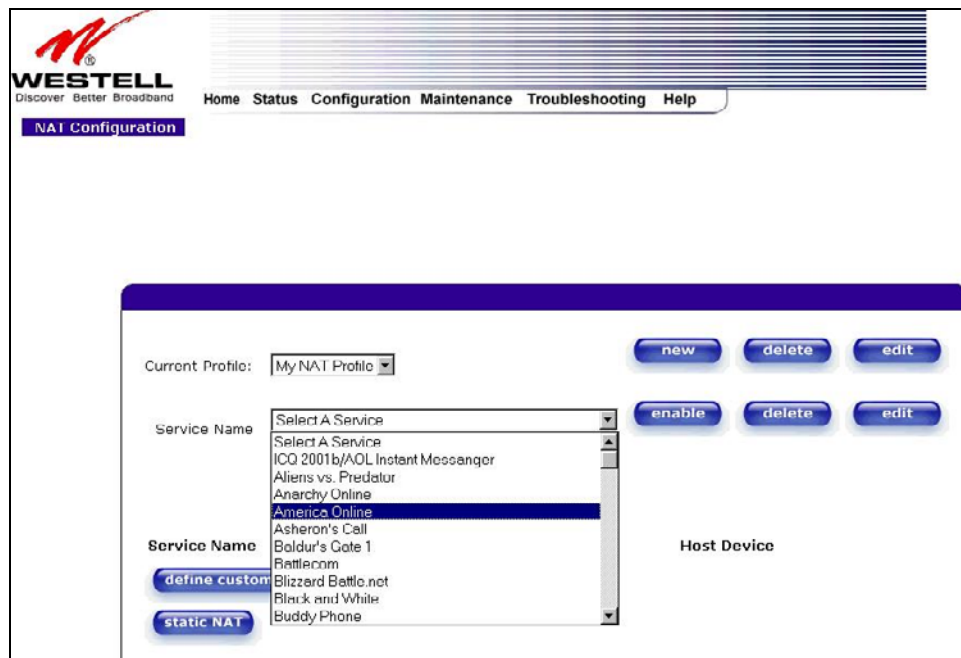


Adding a NAT Service to a Profile

The following screens show you how to add NAT services to your profile. Remember, you may attach an unlimited number of services to your profile.

NOTE: Westell has developed an extensive list of NAT services and you may select any service from this list. By selecting your specific NAT service and setting up a NAT profile, you will ensure that the appropriate ports on your Router are open and that the required application traffic can pass through your LAN. For a list of supported services, please go to section 9.8 (NAT Services).

Select **Service Configuration** from the **Configuration** menu. Choose a NAT service from the selection provided at the **Service Name** pull-down arrow. Next, click on **enable**.



If you clicked on **enable**, the following **Host Service** screen will be displayed. Click on **OK**. This will load the new NAT Configuration and the settings will be saved automatically.

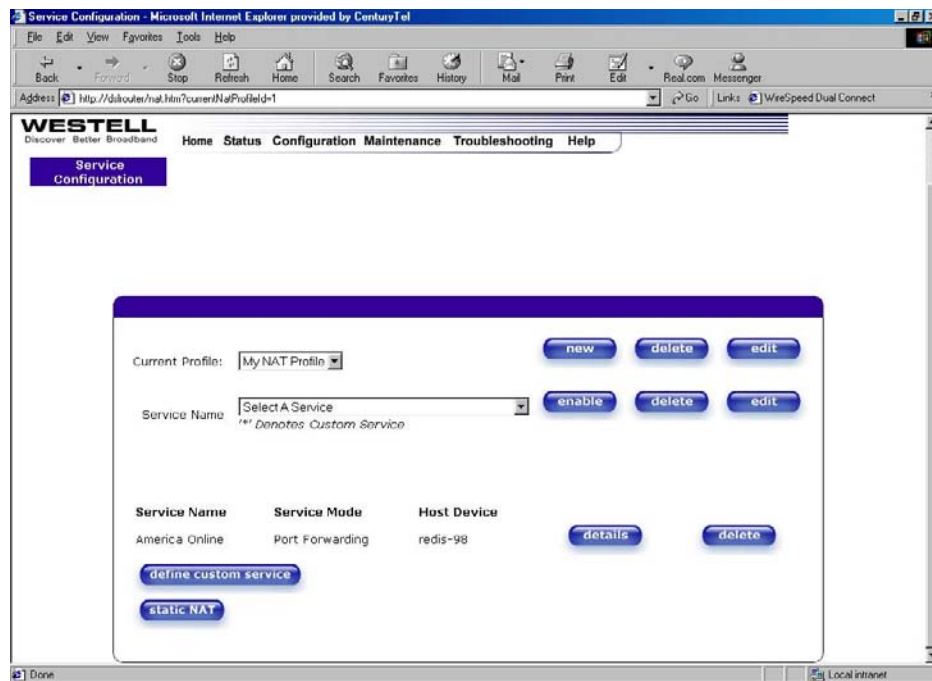


If you clicked on **OK** in the preceding pop-up screen, the **Host Device** screen will be displayed. The **Host Device** screen will allow you to select which device will host the NAT service you selected on your local area network. Select the device from the **Host Device** pull-down arrow and click on **done**.

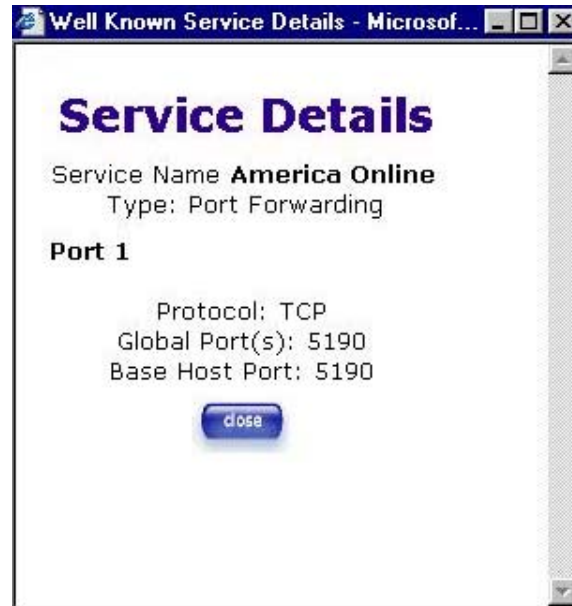


NOTE: You can attach multiple NAT services to your profile. However, for each NAT service that you attach to your profile, you must first select the new NAT service. Next, load the new NAT Configuration, as explained earlier in this section.

Once you have selected a NAT service and you have saved it to your NAT profile, the screen below will be displayed. It shows which NAT service is active for the selected profile.



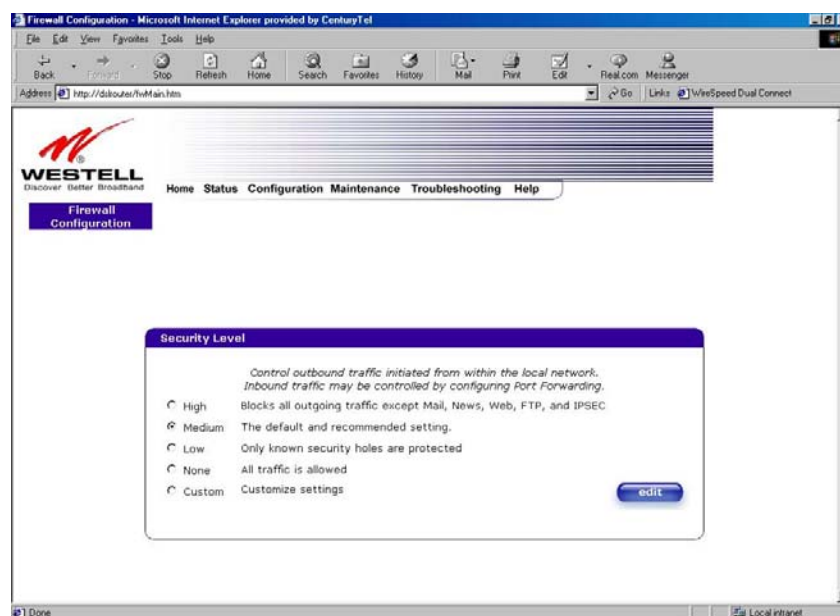
If you select **details** in the previous screen, the screen below will appear, displaying the details of the selected NAT service. If you select **delete**, you will remove that NAT service profile from your Router. Click on **close** in the **Service Details** screen to continue.



NOTE: If you want to set up additional Advanced Service Configuration options, refer to section 9.4 (Advanced Service Configuration).

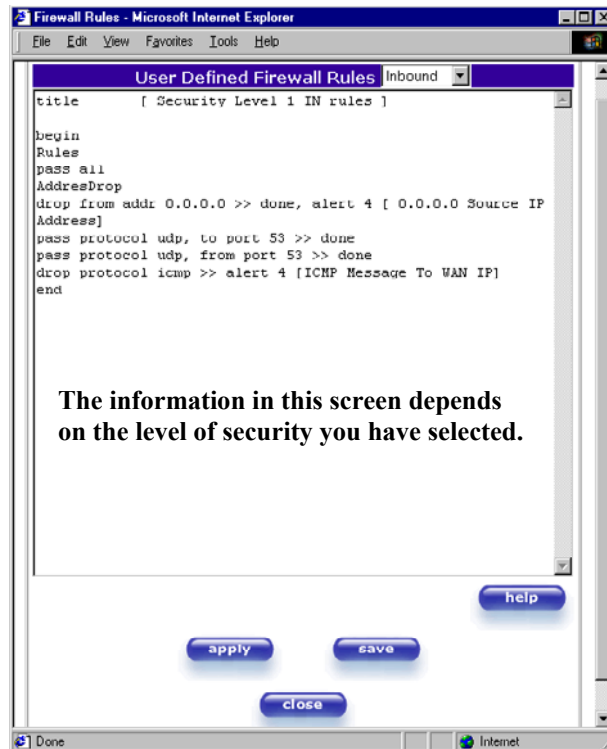
Firewall Configuration

The following settings will be displayed if you select **Firewall Configuration** from the **Configuration** menu.



| | |
|--------|--|
| High | High security level only allows basic Internet functionality. Only Mail, News, Web, FTP, and IPSEC are allowed. All other traffic is prohibited. |
| Medium | Factory Default = MEDIUM Like High security, Medium security only allows basic Internet functionality by default. However, Medium security allows customization through NAT configuration so that you can enable the traffic that you want to pass. |
| Low | The Low security setting will allow all traffic except for known attacks. With Low security, your Router is visible to other computers on the Internet. |
| Custom | Custom is an advanced configuration option that allows you to edit the firewall configuration directly. NOTE: only the most advanced users should try this. |

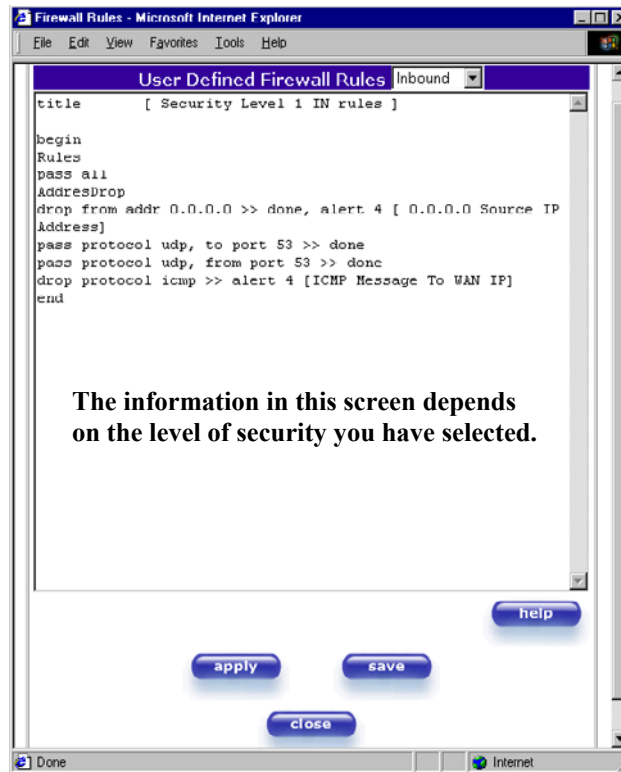
If you select **Edit** from the **Security Level** screen, the **User Defined Firewall Rules** screen will be displayed. This screen allows you to change the security parameters on your Inbound and Outbound Firewall rules via the **User Defined Firewall Rules** pull-down arrow. To apply the new settings, click **Apply** in the screen labeled **User Defined Firewall Rules**.



If you click **Apply** in the **User Define Firewall Rules** screen, the following pop-up screen will be displayed. Click on **OK** if you want your new firewall setting to take affect. If you click **Cancel**, your new firewall settings will not take affect.



If you want to save your new firewall settings, click on **save** in the screen labeled **User Define Firewall Rules**.

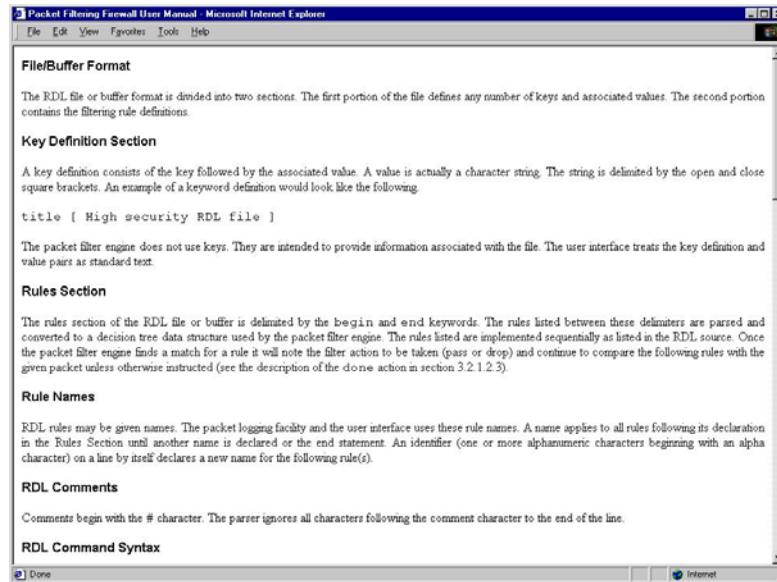


NOTE: Westell recommends that you do not change the settings in the **User Defined Firewall Rules** screen. If you need to reset the Router to factory default settings, push the reset button on the rear of the Router.

If you clicked **save** in the **User Define Firewall Rules** screen, the following pop-up screen will be displayed. Click **OK** when asked **Do you wish to save these Rules to Flash and switch you Security Level to "User"?** This will save your new firewall settings. If you click **Cancel**, your new firewall settings will not be saved.

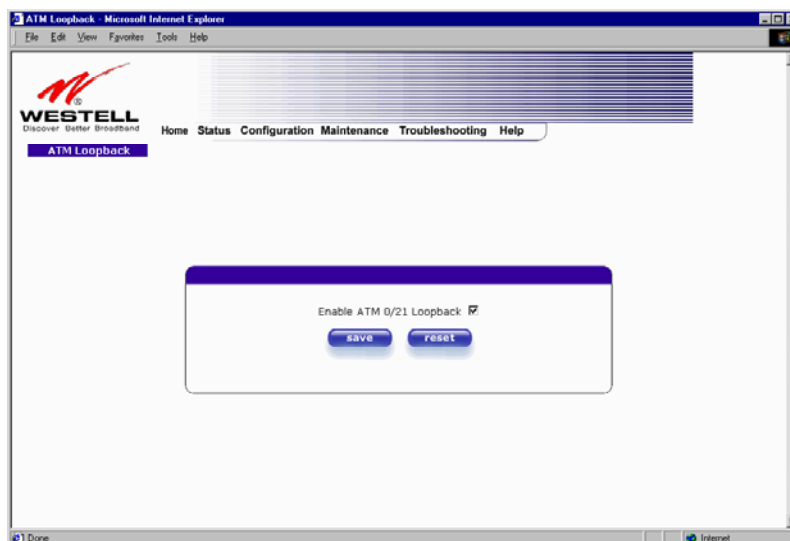


If you select **Help** in the screen labeled **User Defined Firewall Rules**, the following screen will be displayed. This screen gives a detailed explanation of the Firewall Rules.



ATM Loopbacks

If you select **ATM Loopbacks** from the **Configuration** menu, the following settings will be displayed.



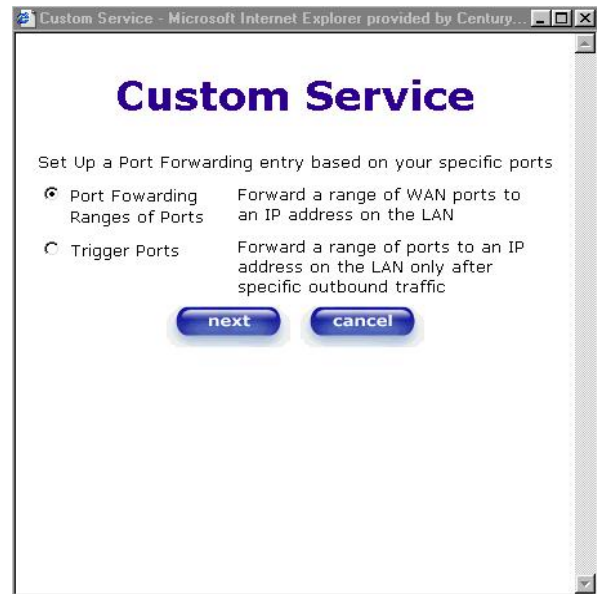
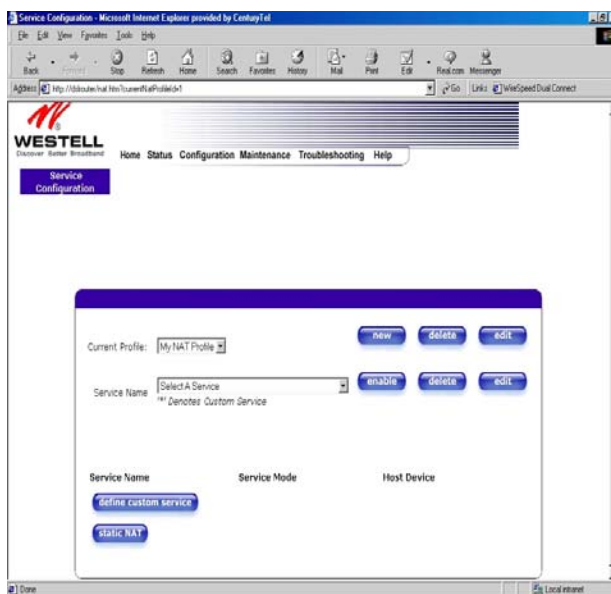
| | |
|---------------------------|--|
| Enable ATM 0/21 Loopback: | <p>Factory Default = ENABLED</p> <p>This option enables the 0/21 loopback, which is used by your ISP. NOTE: Westell does not recommend that you change this setting.</p> |
|---------------------------|--|

9.4 Advanced Service Configuration

You can set up additional Service Configuration options for your Dual Connect Router that allow you to enter the port forwarding and trigger ports ranges of your choice. Go to **Configuration** at the homepage menu and select **Service Configuration**.

When you click on **define custom service** in the **Service Configuration** screen, the **Custom Service** screen will guide you through the steps of creating an advanced NAT service entry via the **define custom service** button.

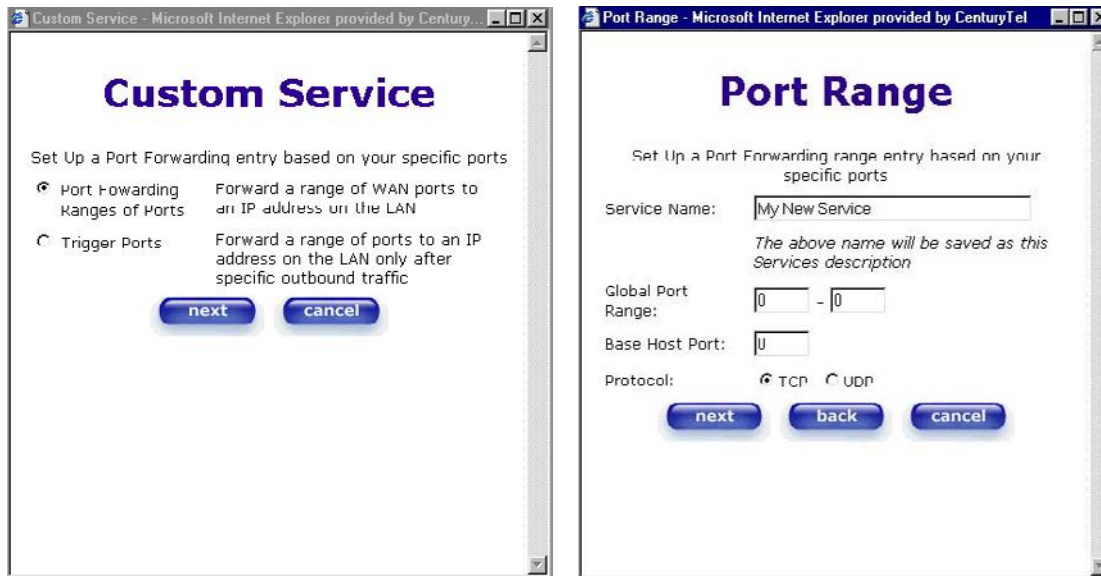
NOTE: Westell strongly recommends that you do not change any values in this section. If you experience any problems, please reset your Router via the external hardware re-set button or the procedure defined under the **Maintenance** menu.



| | |
|---------------------------------|--|
| Port Forwarding Ranges of Ports | This option allows you to forward a range of WAN ports to an IP address on the LAN. |
| Trigger Ports | This option allows you to forward a range of ports to an IP address on the LAN only after specific outbound traffic. |

Port Forwarding Ranges of Ports

To select **Port Forwarding Ranges of Ports**, click on **define custom service** from the **Service Configuration** screen, and then select **Port Forwarding Ranges of Ports** from the **Custom Service** screen. Click on **next**. The follow settings will be displayed in the **Port Range** screen. Enter your values in the **Global Port Range** fields and click on **next** to continue.



Custom Service

Set Up a Port Forwarding entry based on your specific ports

☒ Port Forwarding Ranges of Ports Forward a range of WAN ports to an IP address on the LAN

☐ Trigger Ports Forward a range of ports to an IP address on the LAN only after specific outbound traffic

next **cancel**

Port Range

Set Up a Port Forwarding range entry based on your specific ports

Service Name:

The above name will be saved as this Services description

Global Port Range: -

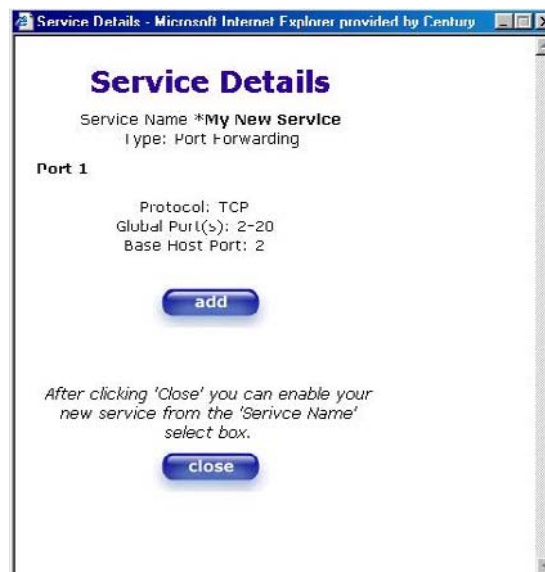
Base Host Port:

Protocol: ☒ TCP ☐ UDP

next **back** **cancel**

Adding Port Forwarding Ports

If you made changes in the **Global Port Range** screen and clicked on **next**, the following screen will be displayed. You may either click on **close** to accept the changes, or click on **add** to go back to **Port Range** screen, enter additional port range values, and click on **next**. You can repeat this step for each range of ports that you want to add (up to 62 port forwarding ranges). When you are finished adding ports to the Global Port Range, you must click on **close** to accept the information you have entered and return to the **Service Configuration** screen.



Service Details

Service Name *My New Service

Type: Port Forwarding

Port 1

Protocol: TCP

Global Port(s): 2-20

Base Host Port: 2

add

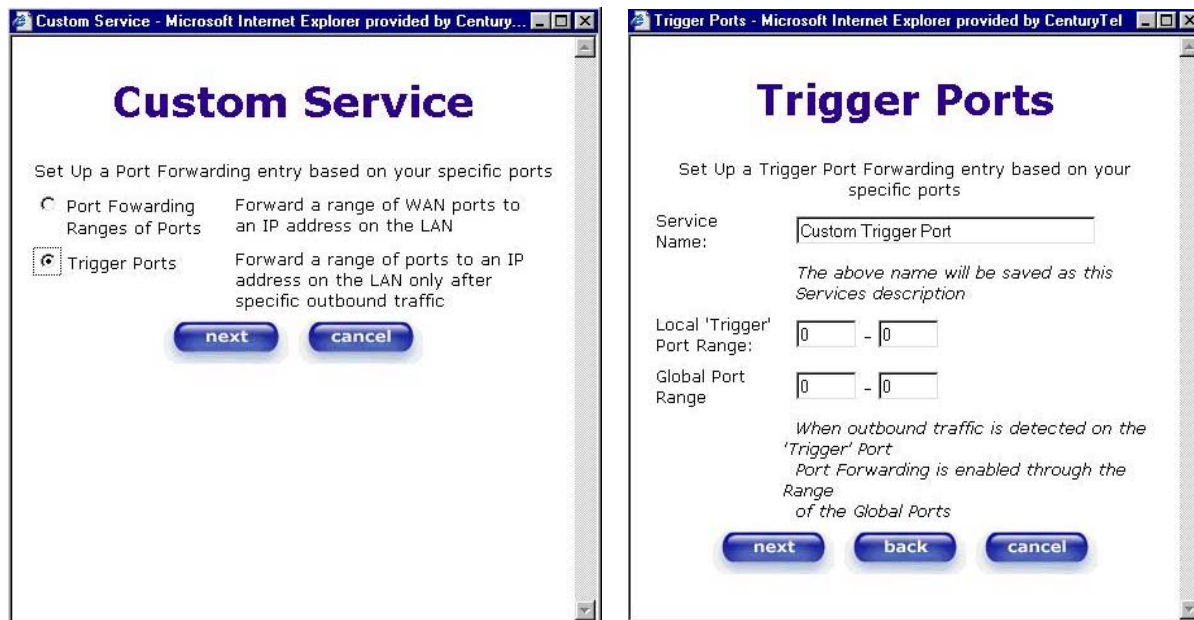
After clicking 'Close' you can enable your new service from the 'Service Name' select box.

close

| | |
|-------------------|---|
| Service Name | The NAT service you selected. |
| Local IP Address | If a static IP address has been assigned, it will be displayed here. |
| Global Port Range | The Global Port Range will be mapped to host the device beginning at the base host port. The port range that is provided by the service that you are customizing. Acceptable values for Global Port Range are 1 to 65535, and the first port must be less than or equal to the second port. |
| Base Host Port | The port on the WAN that will host the NAT service selected. Acceptable values for Base Host Port are 0 to 65535, and the first port must be less than or equal to the second port. |
| Protocol | The type of Protocol that is used to run this NAT service. TCP- Transmission Control Protocol. UDP-User Datagram Protocol (UDP). |

Port Forwarding Trigger Ports

To select **Port Forwarding Trigger Ports**, click on **define custom service** from the **Service Configuration** screen and then select **Trigger Ports** from the **Custom Service** screen. Click on **next**. The follow settings will be displayed in the **Trigger Ports** screen. Enter your values in the **Local 'Trigger' Port Range** fields and click on **next** to continue.



Custom Service

Set Up a Port Forwarding entry based on your specific ports

☐ Port Forwarding Ranges of Ports Forward a range of WAN ports to an IP address on the LAN
☒ **Trigger Ports** Forward a range of ports to an IP address on the LAN only after specific outbound traffic

next **cancel**

Trigger Ports

Set Up a Trigger Port Forwarding entry based on your specific ports

Service Name:

The above name will be saved as this Services description

Local 'Trigger' Port Range: -

Global Port Range: -

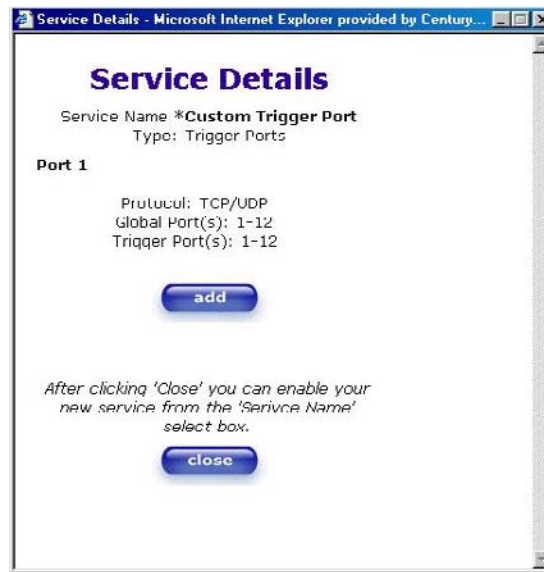
When outbound traffic is detected on the 'Trigger' Port Port Forwarding is enabled through the Range of the Global Ports

next **back** **cancel**

| | |
|--------------------------|---|
| Service Name | The NAT service you selected. |
| Local Trigger Port Range | The local LAN side TCP/UDP port. Acceptable values for Local Trigger Port Range are 1 to 65535, and the first port must be less than or equal to the second port. |
| Global Port Range | The WAN side TCP/UDP port range. Acceptable values for Global Port Range are 1 to 65535, and the first port must be less than or equal to the second port. |

Adding Local Trigger Ports

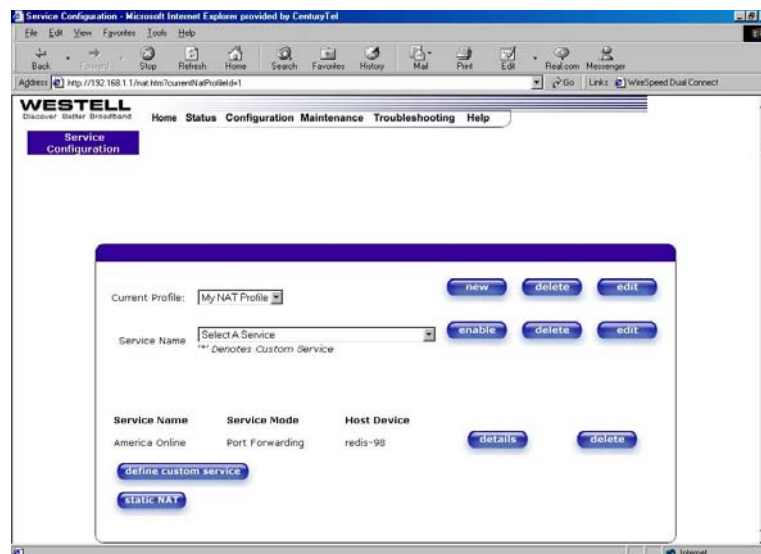
If you made changes in the **Local ‘Trigger’ Port Range** screen and clicked **next**, the following screen will be displayed. You may either click on **close** to accept the changes, or click on **add** to go back to the **Trigger Ports** screen, enter additional port range values, and click on **next**. You can repeat this step for each port range that you want to add (up to 10 trigger ports). When you are finished adding ports to the Local ‘Trigger’ Port Range, you must click on **close** to accept the information you have entered and to return to the **Service Configuration** screen.



Static NAT

To configure your Router for Static NAT, select **Service Configuration** from the **Configuration** menu.

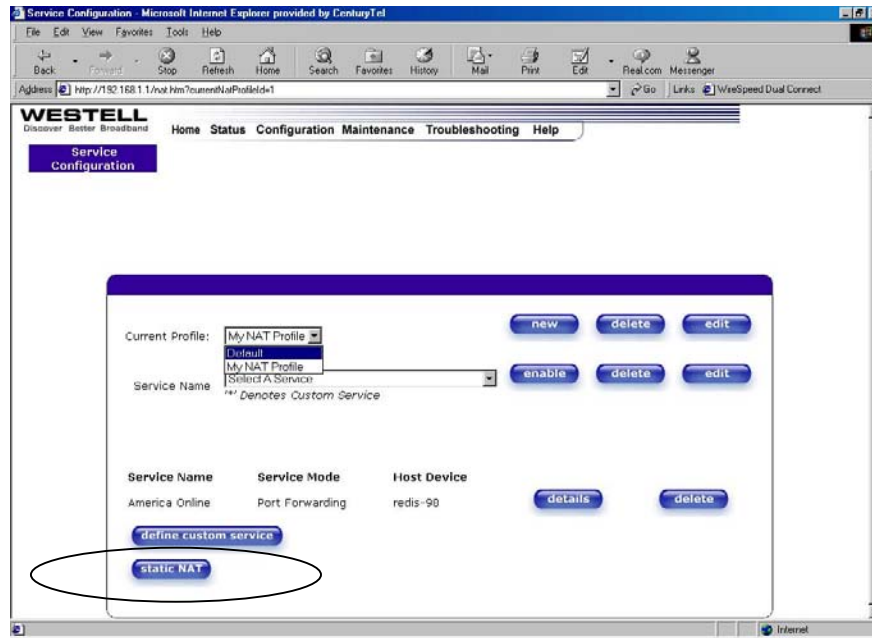
NOTE: Static NAT will allow you to configure your Router to work with the special NAT services. Only the Router’s default account profile can be enabled or disabled for a Static NAT.



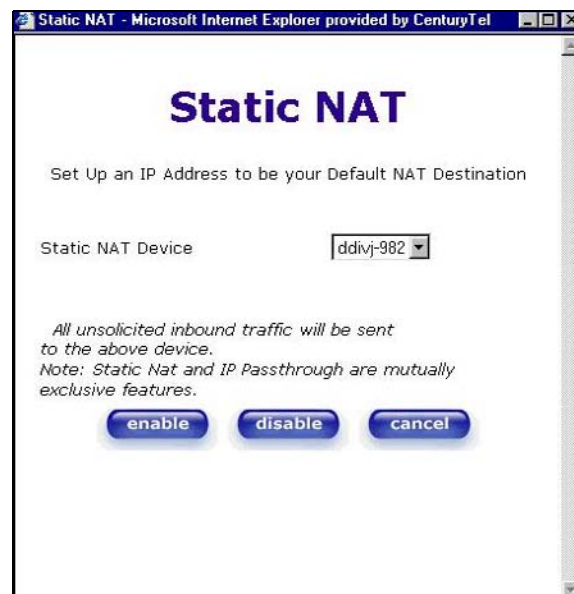
Enabling Static NAT

At the **Service Configuration** screen, select the Router's default account profile from the **Current Profile** pull-down box. Click on the **static NAT** button.

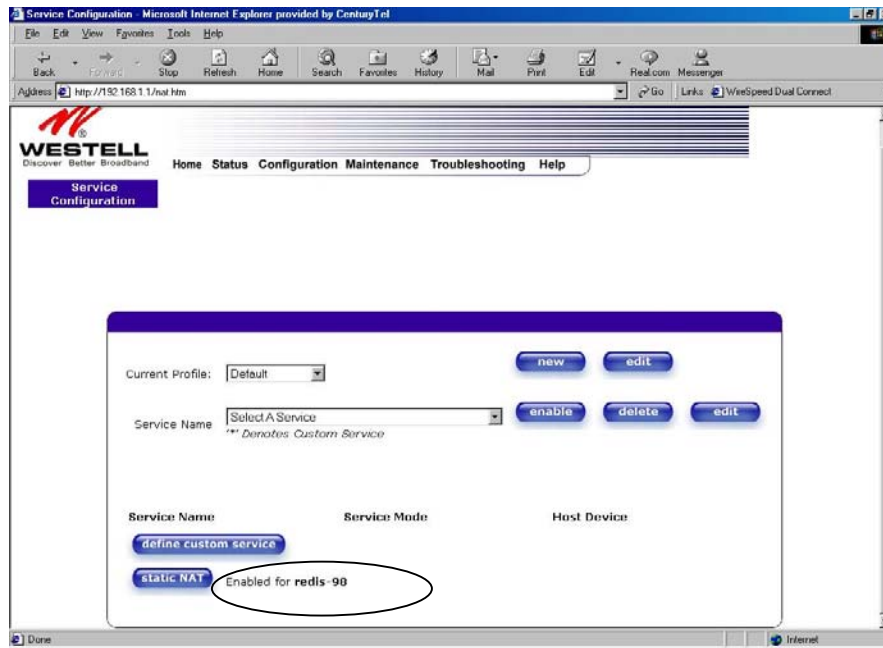
NOTE: In the following screen, the default account profile is labeled **Default**. However, if you have renamed default account profile, you must select the name you created as the default.



If you click on the **static NAT** button, the following screen will be displayed. Select a device from the **Static NAT Device** pull-down box and click on **enable**. This will automatically enable the Static NAT feature for the device you select.

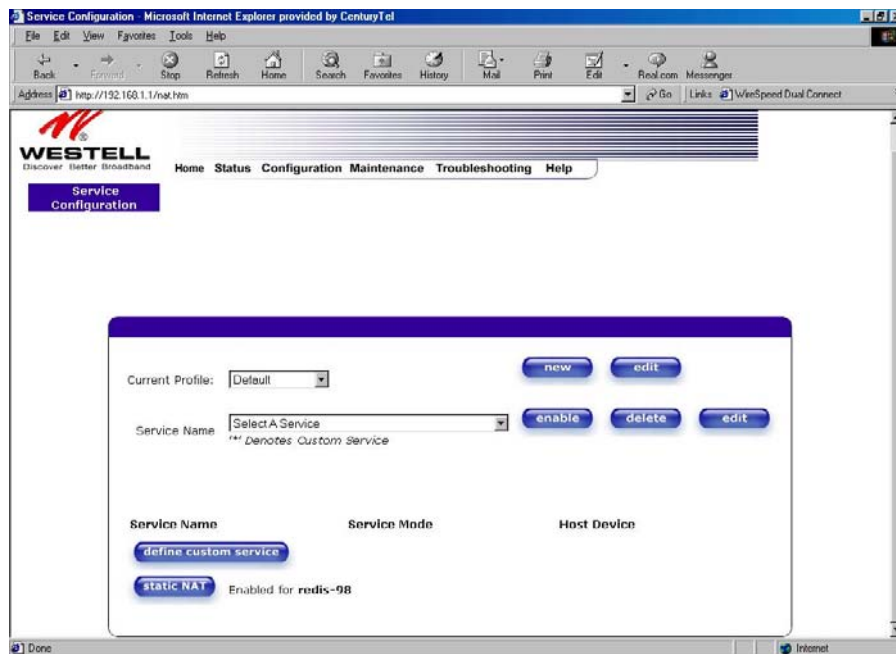


If you click on **enable** in the **Static NAT** screen, the **Service Configuration** screen will be displayed, showing that Static NAT is enabled for the device you selected.

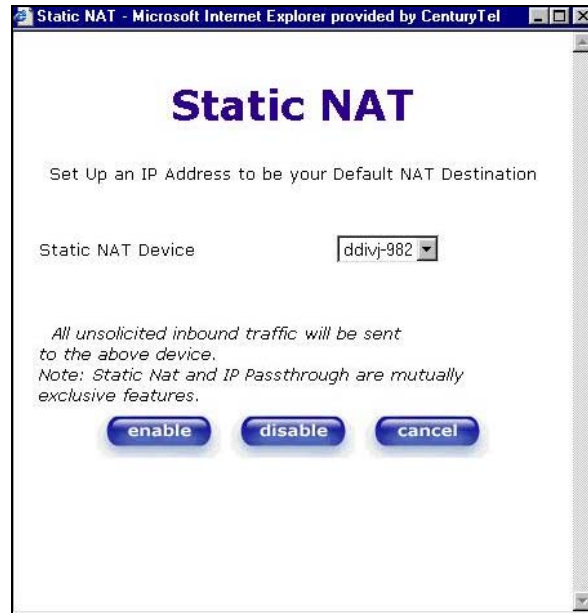


Disabling Static NAT

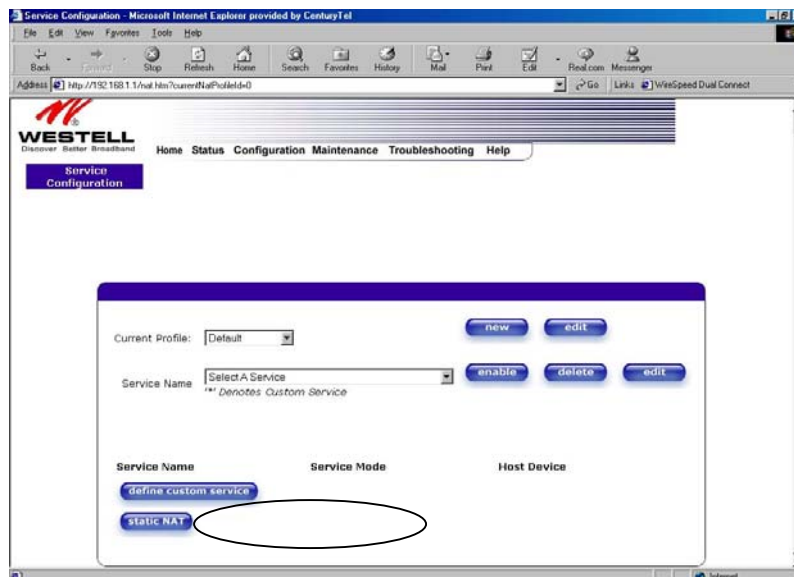
If you want to disable Static NAT, click on the **static NAT** button in the **Service Configuration** screen. Remember, only the Router's default account profile can be enabled or disabled for Static NAT.



If you click on the **static NAT** button in the **Service Configuration** screen, the following screen will be displayed, select a device from the **Static NAT Device** pull-down box and click on **disable**. This will automatically disable Static NAT for the device you select.



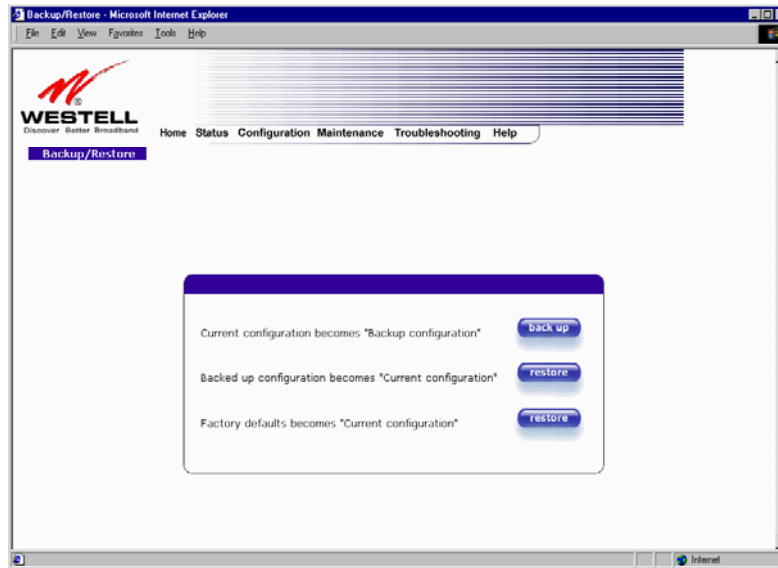
If you click on **disable** in the **Static NAT** screen, the **Service Configuration** screen will be displayed, showing that stat NAT is disabled. (No device is displayed next to the static NAT button.)



9.5 Maintenance

Backup/Store

The following settings will be displayed if you select **Backup/Restore** from the **Maintenance** menu.

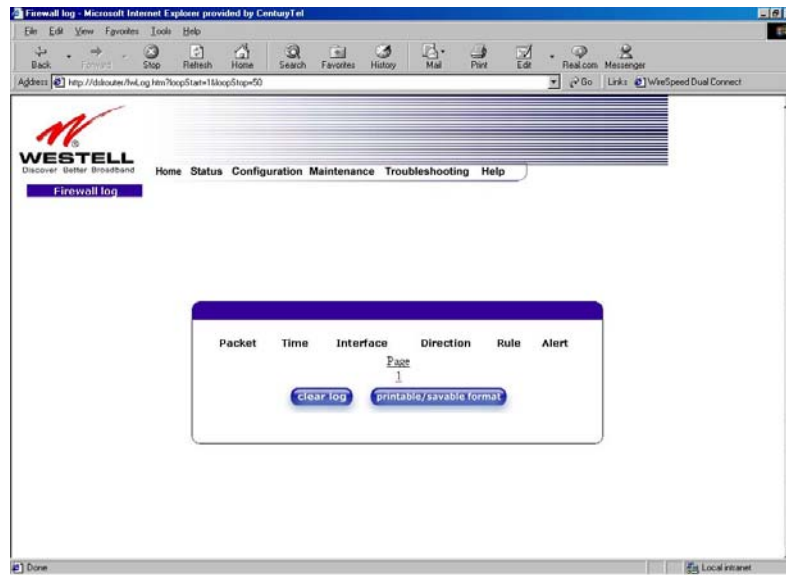


| | |
|---|---|
| Current configuration becomes Backup Configuration | Select this button if you want to store all of the current configuration data so that it can be recalled later. |
| Backed up configuration becomes Current configuration | Select this button if you want to retrieve the last back up copy of all configuration parameters and make these values current. |
| Factory default becomes Current configuration | Select this button if you want set all user configurable parameters back to the factory default. |

Firewall Log

The following settings will be displayed if you select **Firewall Log** from the **Maintenance** menu.

This screen is an advanced diagnostics screen. It alerts you of noteworthy information sent to your Router from the Internet. The screen can contain 1000 entries, but a maximum of 50 entries are displayed at a time. Once 1000 entries have been logged, the oldest entry is removed to make space for the new entries as they occur. The following settings are displayed.



| | |
|-----------|--|
| Packet | The packet number. |
| Time | The time that the packet was sent. |
| Interface | The type of protocol interface. |
| Direction | The direction of transmission. |
| Rule | The internal rule that caused the logged event. The internal rule is setup under Firewall rules. |
| Alert | A description of the logged event. |

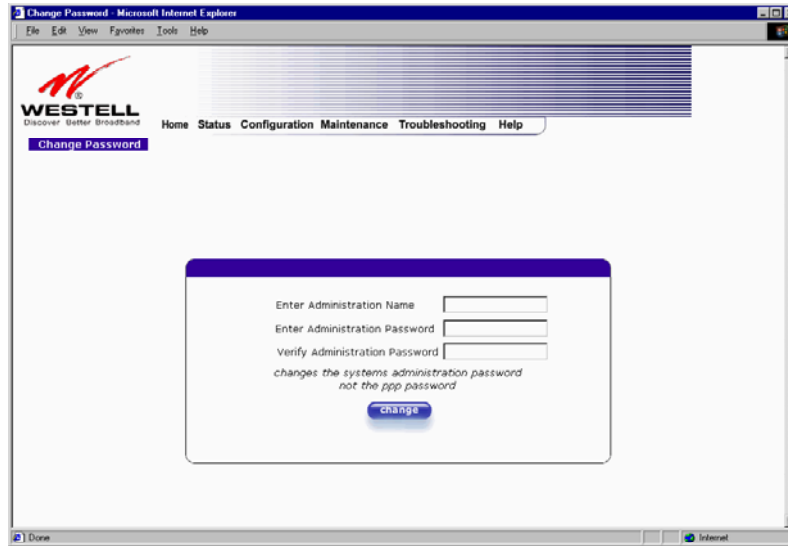
To clear the Firewall log, click **clear log** in the **Firewall Log** screen. The following pop-up screen will be displayed. Click **OK** when asked “Do you wish to clear the Firewall log file?” If you click **Cancel**, the firewall log will not be cleared.



To obtain a printable format of the Firewall Log, at the **Firewall Log** screen, click **Printable/Saveable Format**. This will allow you to send a copy of the Firewall log to your designated printer.

Change Password

The following settings will be displayed if you select **Change Password** from the **Maintenance** menu. After you enter your data into the appropriate settings, click on **change**.



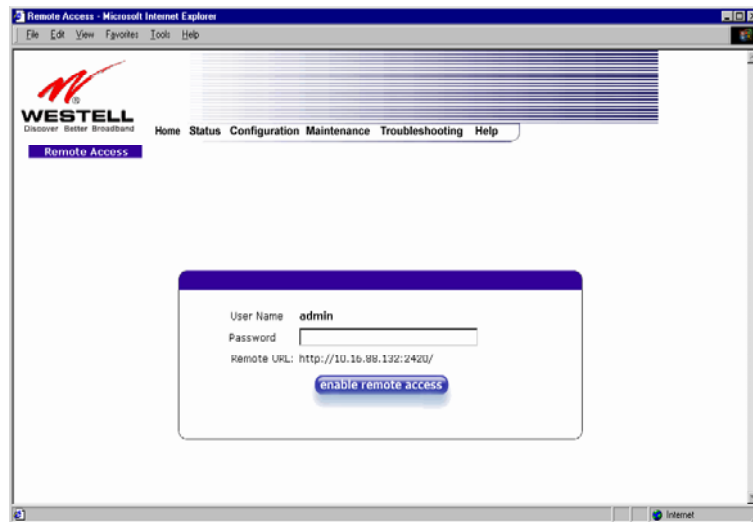
| | |
|--|--|
| Enter Administrative Name NOTE: This changes the Systems Administrator password not the PPP password. | Type the name of your network administrative. |
| Enter Administrative Password | Type your network administrator's password. |
| Verify Administrative Password | Re-type your network administrator's password. |

Remote Access

The following screen will appear if you select **Remote Access** from the **Maintenance** menu. To enable Remote Access, type in a password and click on the **enable remote access** button.

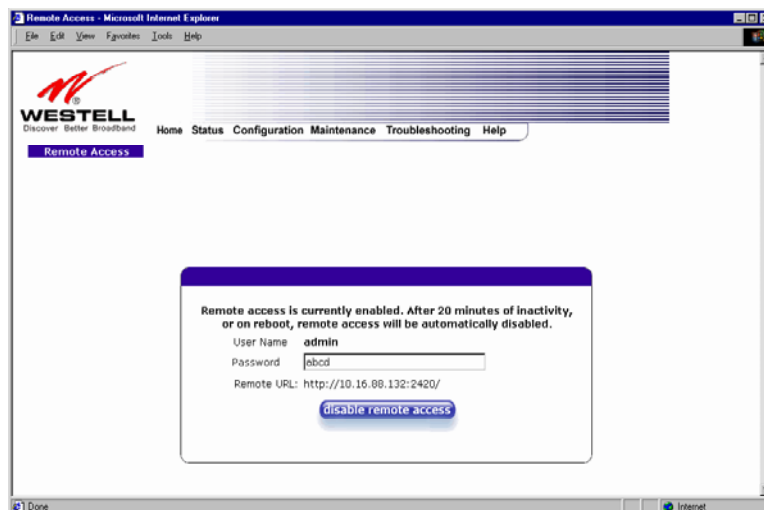
Enabling Remote access allows your Internet service provider to access your Router via HTTP web screens. This feature can be activated only when the user wants to grant access rights to the Internet service provider

NOTE: The password should be at least 4 characters long and should not exceed 32 characters. Do not type a blank space or asterisks in the Password field. The password is also case sensitive.



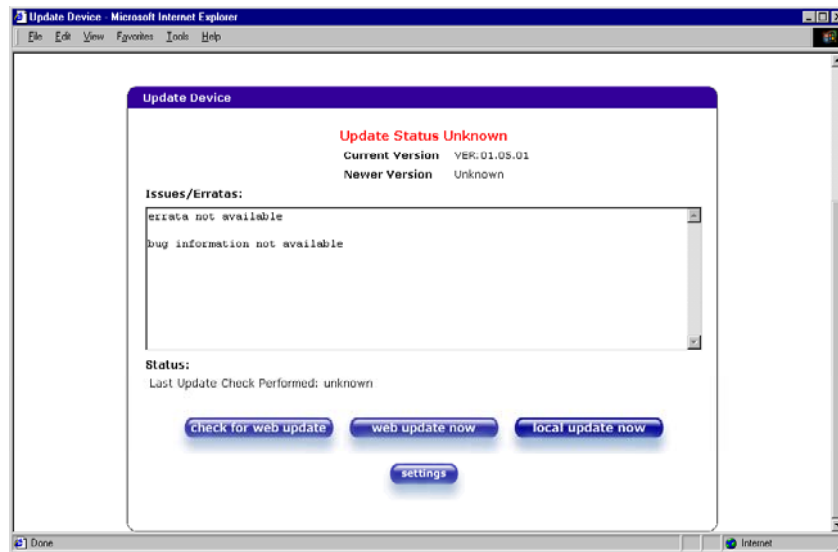
| | |
|-----------|--|
| User Name | Displays your current User Name (Static field) |
| Password | Field for entering your password |
| URL | Displays the IP address of the remote management gateway |

The following screen displays a message that the remote access is currently enabled. After 20 minutes of inactivity, or on reboot, remote access will be disabled automatically. To disable remote access, click on the **disable remote access** button.



Update Device

The following screen will be displayed if you click on **Update Device** from the **Maintenance** menu. This screen is used to update the firmware that controls the operation of the DSL Router. The updated firmware may be loaded from either a file that is located on your PC's hard drive or from update files stored on an Internet server.

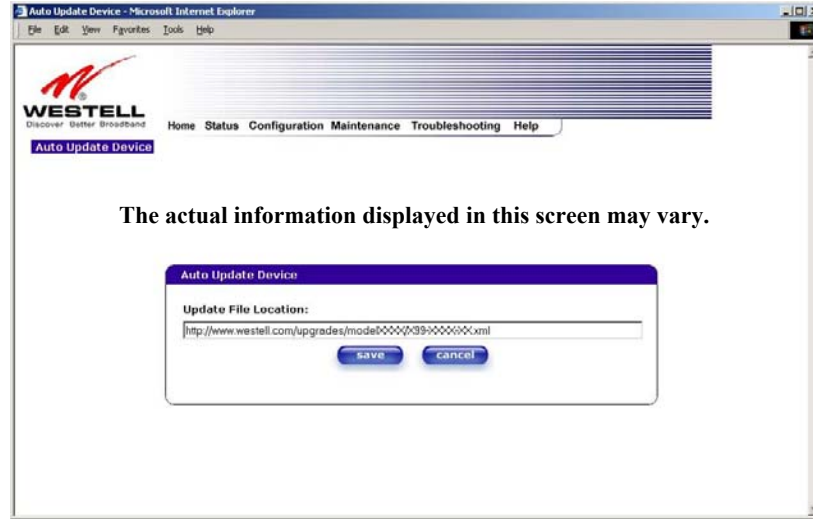


Click on the **check for web update** button in the **Update Device** screen to check the web for possible software updates. This screen will retrieve the software update file and display any available update information. You must be connected to the Internet to use this option.

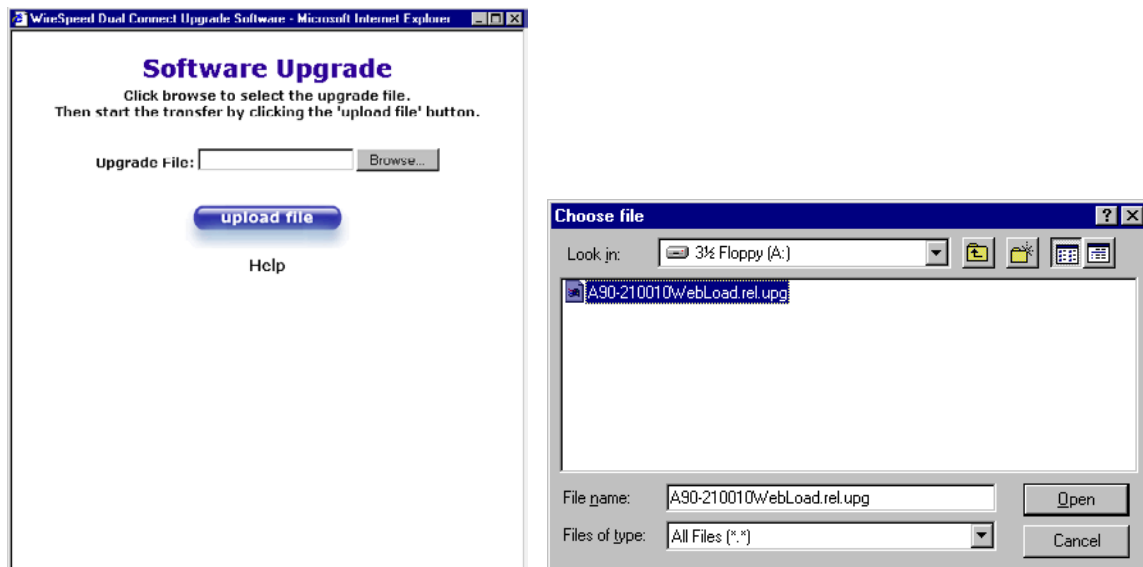
NOTE: If you click on **check for web update** and the page returns a “page not found” message, this indicates that the software update file is not available. Go back to the previous screen to continue.

Click on the **web update now** button in the **Update Device** screen to download the software update file and automatically update the modem firmware if an update is available and applicable. You must be connected to the Internet to use this option.

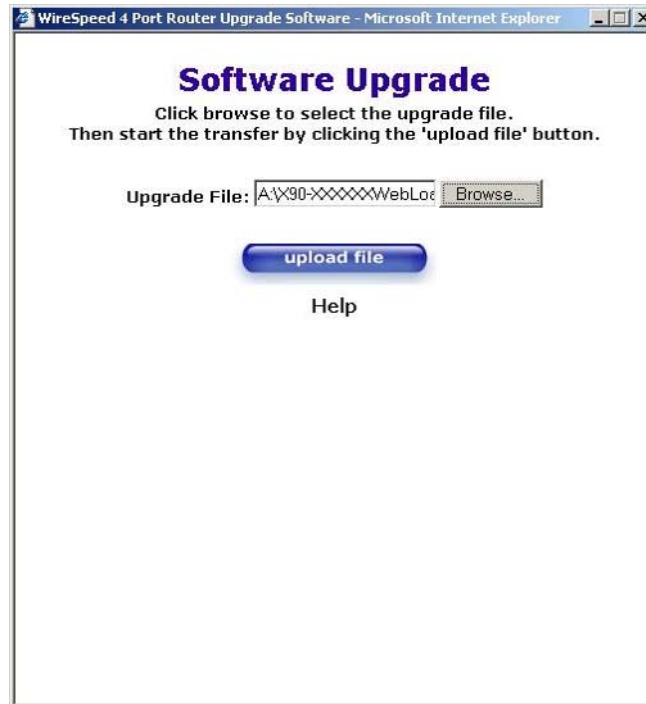
If you click on the **settings** button in the **Update Device** screen, the following screen will appear. This screen displays the location of the update software file.



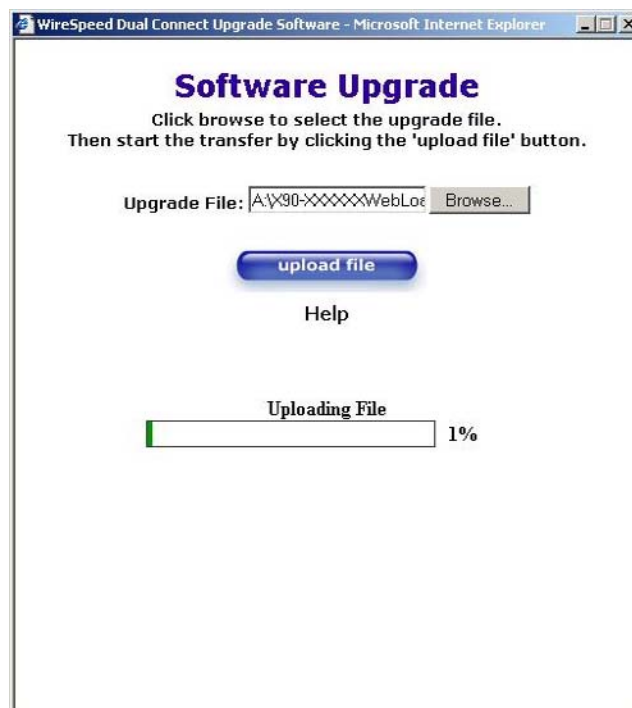
Click on the **local update now** button in the **Update Device** screen to select the upgrade file from your PC's hard drive. This screen allows you to upgrade the software on your Router. Click **Browse...** and go to the location where the upgrade file is stored.



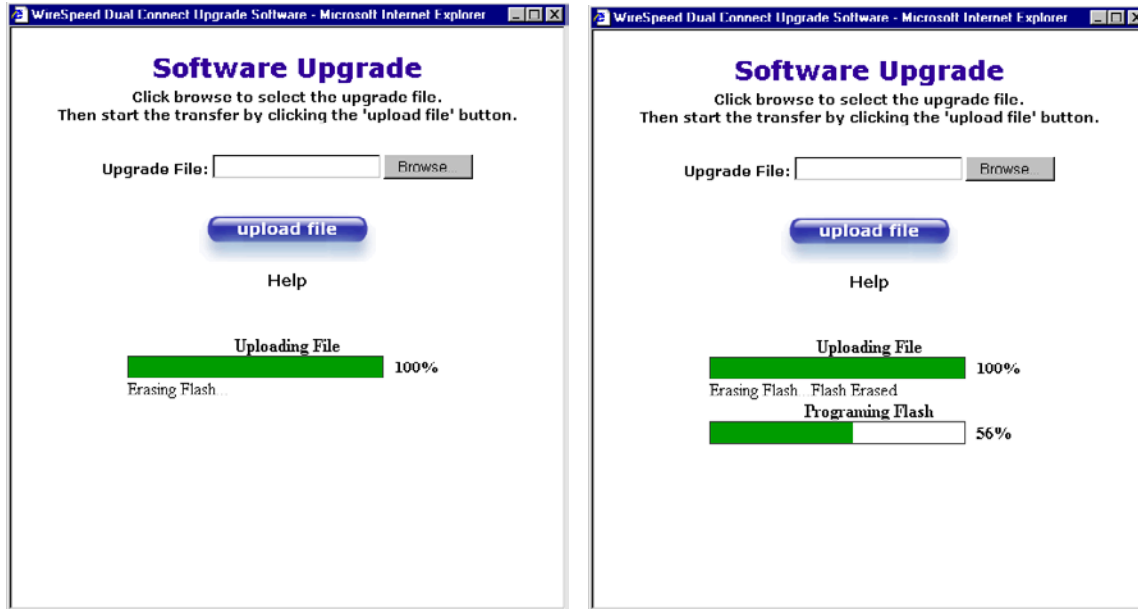
Select the appropriate upgrade file from your browser. The file name will appear in the field labeled **Upgrade File**. Click on **upload file**.



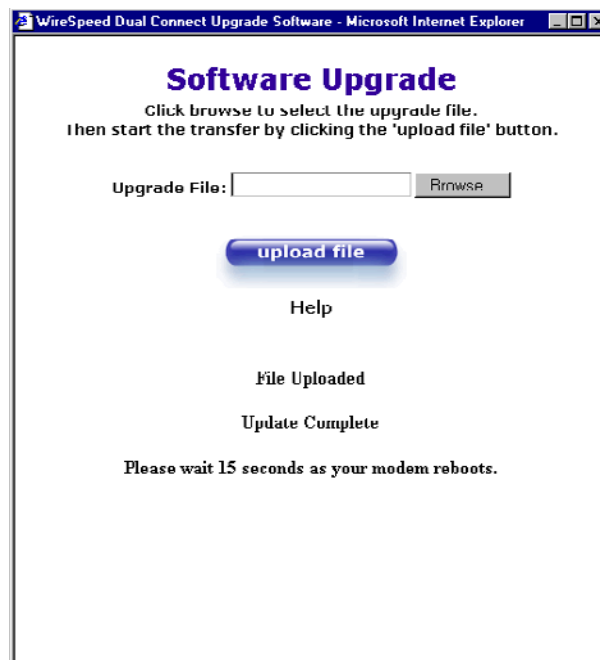
This screen shows that the file is being uploaded to your Router.



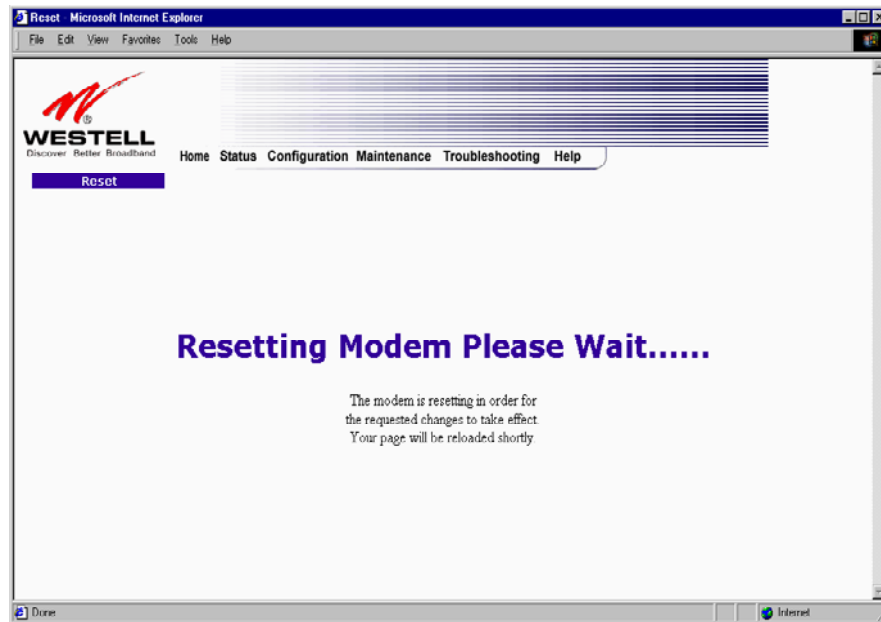
The screens below show that the file upload has completed and that the Programming Flash is being erased to prepare the Flash storage area for upload of the new file. (Programming Flash is a temporary storage area for uploaded files.)



The screen below shows that the upload was successful. The modem will now reboot.



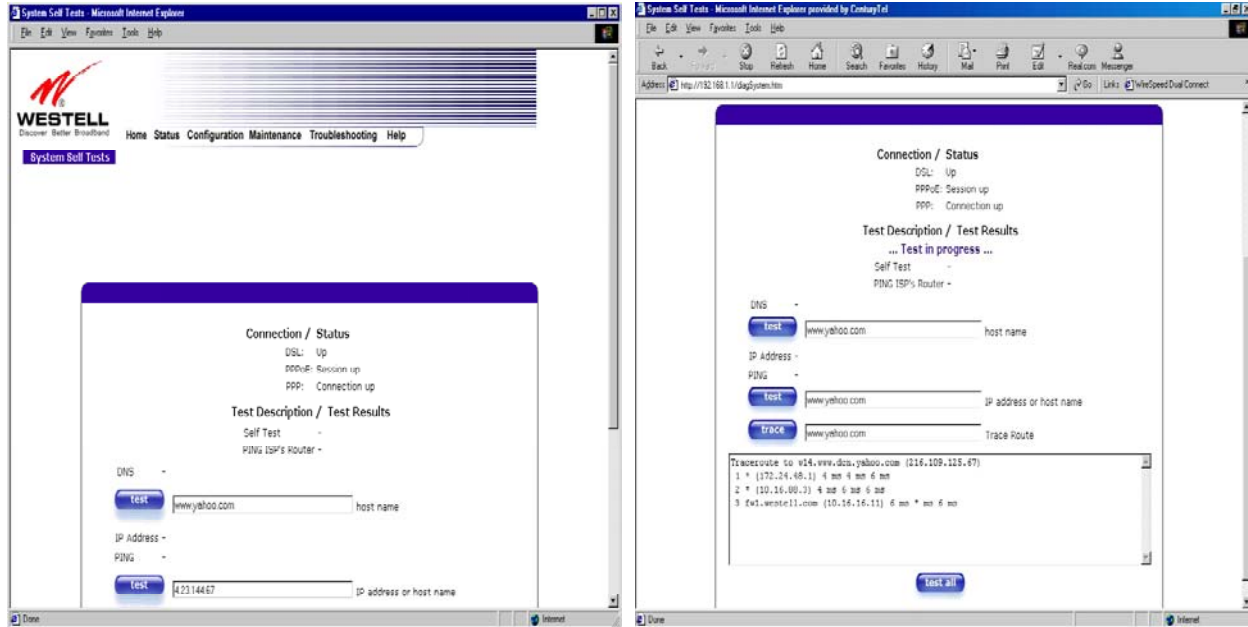
The screen below shows that the Router is being reset.



9.6 Troubleshooting

System Self Tests

The following settings will be displayed if you select **System Self Tests** from the **Troubleshooting** menu. Click on **test** to run a diagnostic test on your Router's connection.



| Connection/Status | |
|-------------------|--|
| DSL | <p>The Router checks the status of the Router connection.</p> <p>Possible responses are: UP: The Router is operating correctly and has obtained synchronization with the opposing network device. DOWN: The Router is operating correctly, but has not synchronized with the opposing device.</p> |
| PPPoE | <p>Indicates that a PPPoE session is or is not established.</p> <p>Possible responses are: Session UP: A valid PPPoE session has been detected. No Session: Currently there is no active PPPoE session established. Initiating Session: A PPP session must be connected from the homepage screen.</p> |
| PPP | <p>Indicates that a PPPoE or PPPoA session must already be established.</p> <p>Possible responses are: Connection UP: The Router has established a connection No Connection: There is no PPP connection Initiating Connection: The PPP connection process has been initiated Connection Halted: A successful PPP connection was halted Cannot Connect: A PPP connection could not be made because of a PPPoE session failure.</p> |

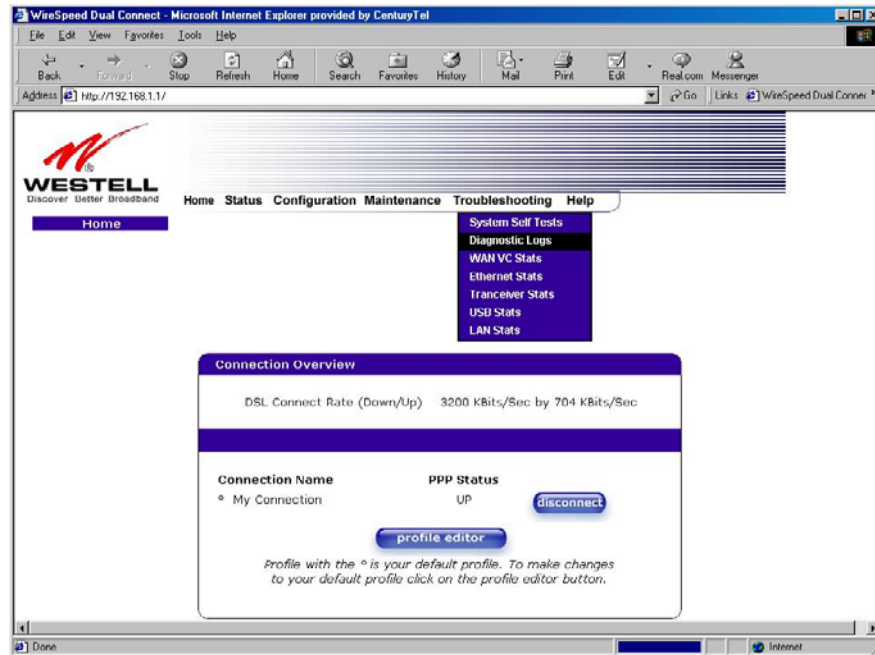
| | <p>Authorization Failure: The user name or password is incorrect.</p> <p>Link Control Protocol Failed: Re-establish the session (from the home page).</p> |
|---------------------------------|---|
| Test Description / Test Results | |
| Self Test | Performs an integrity check of certain internal components of the Router. |
| PING ISP's Router | <p>Performs an IP network check (i.e., an IP Ping) of the Service Provider's Router. This test verifies that the Router can exchange IP traffic with an entity on the other side of the DSL line.</p> <p>Possible responses are: Success: The Router has detected an IP Remote Router connection. No Response: The IP Remote Router does not answer the IP Ping. Could not test: The test could not be executed because of the Router status.</p> |
| DNS | <p>Performs a test to try to resolve the name of a particular host. The host name is entered in the input box.</p> <p>Possible responses are: Success: The Router has successfully obtained the resolved address. The IP address is shown below the host name input box. No Response: The Router has failed to successfully obtain the resolved address. Host not found: The DNS Server was unable to find an address for the given host name. No data, enter host name: No host name is specified. Could not test: The test could not be executed because of Router status.</p> |
| IP Address | IP Address of the Host Name. |
| PING | <p>Performs an IP continuity check to a remote computer either within or beyond the Service Provider's network.</p> <p>Possible responses are: Success: The Remote Host computer was detected. No Response: There was no response to the Ping from the remote computer. No name or address to PING: No host name or IP address was specified. Could not test: The test could not be executed because of the Router status.</p> |
| Trace Route | Determines the route taken to a destination by sending Internet Control Message Protocol (ICMP) echo packets with varying IP Time-To-Live (TTL) values to the destination. Trace Route is used to determine where is packet stopped on the network. |

Diagnostic Logs

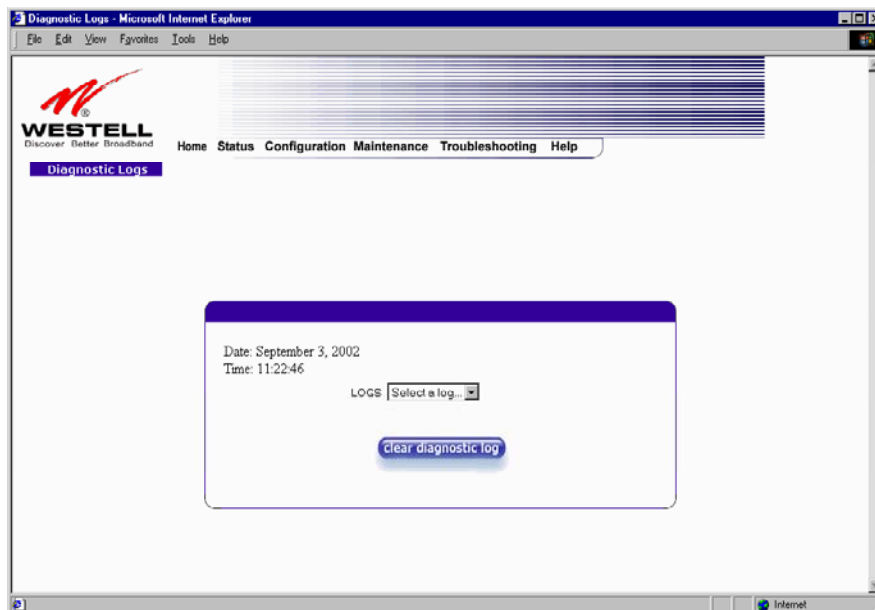
The diagnostic log file provides a detailed list of the Router's connection status and system information. You can view this information, and then save it to the directory of your choice.

Running a Diagnostic

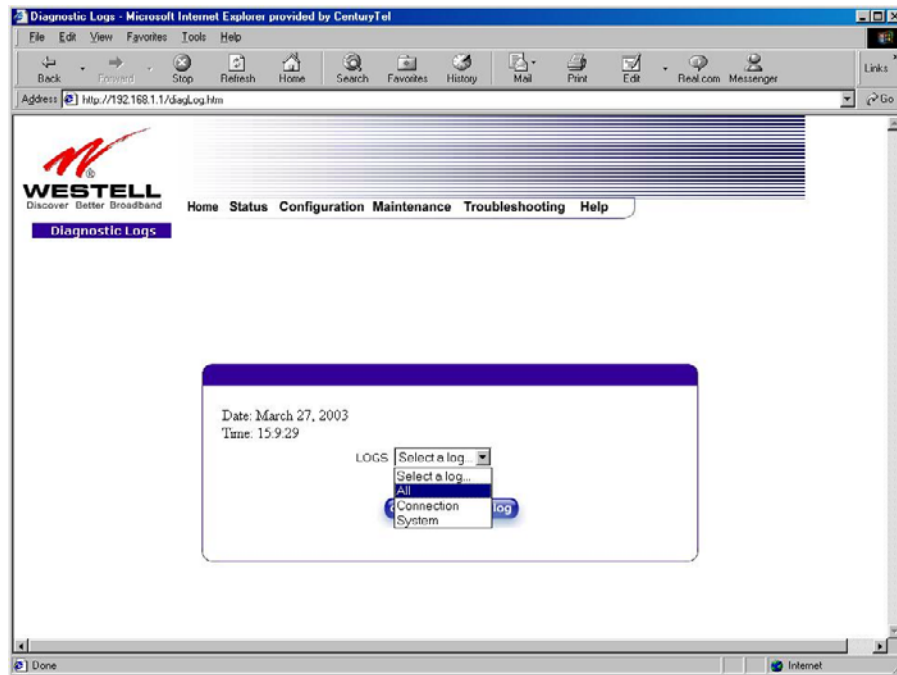
To run a diagnostic, select **Diagnostic Logs** from the **Troubleshooting** menu.



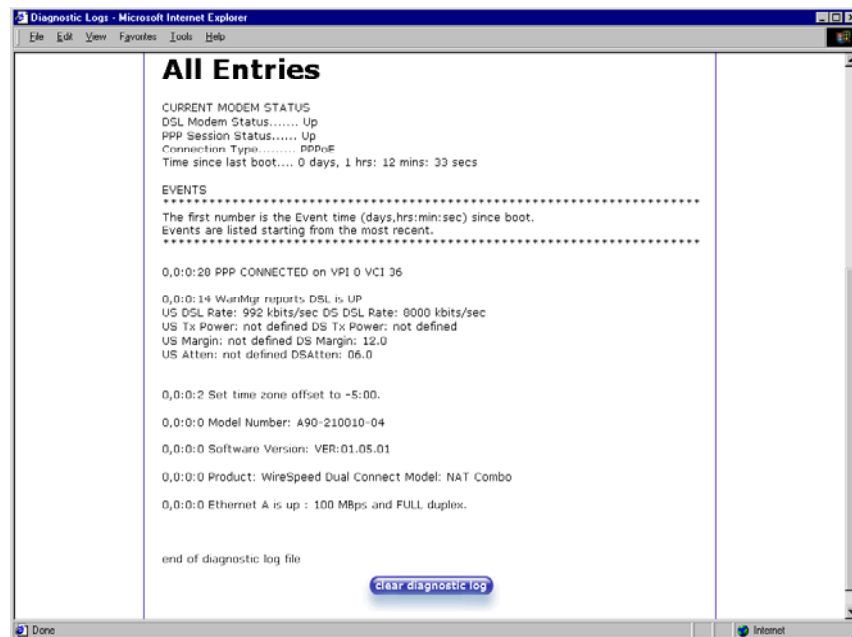
If you select **Diagnostic Log** from the **Troubleshooting** menu, the following screen will be displayed.



Select an option from the **LOGS** drop-down box.

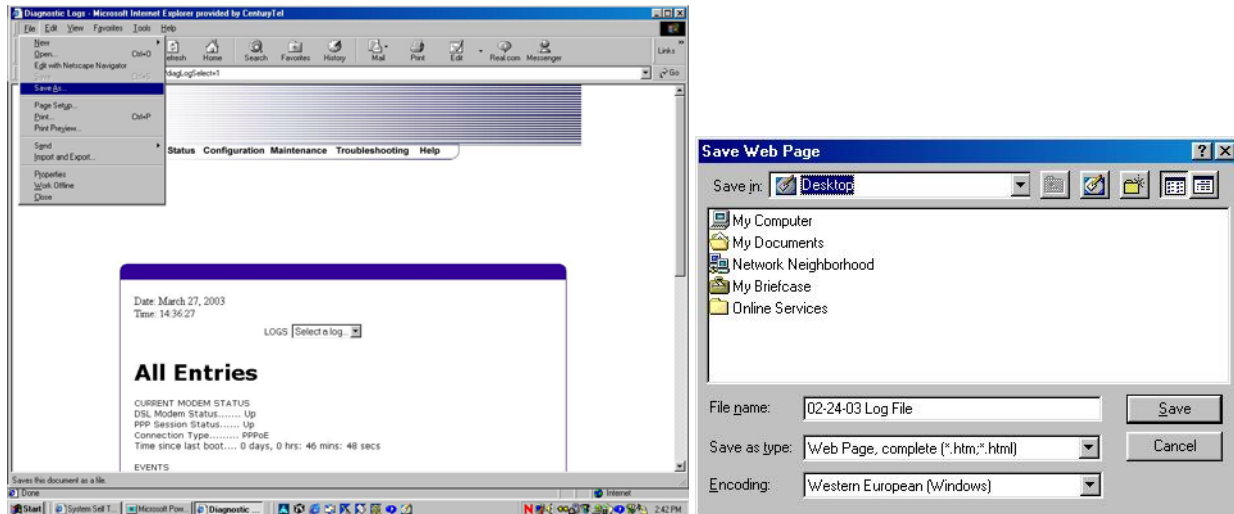


If you select **ALL**, the following screen will display the logged results of the diagnostic test. You can click on the **clear diagnostic log** button to clear the contents of the diagnostic log, or you can **save the diagnostic log file** to your desktop.



Saving the Diagnostic Log File

If you want to save a diagnostic log file to your desktop, go to your Browser's menu and select **File**, then select **Save As** from the drop-down menu. At the **Save Web Page** dialog box, select your computer's desktop as the destination to save the log file. (You can choose a different location to save the log file, if desired.) Next, enter a name in the **File name** field and click on **Save**.

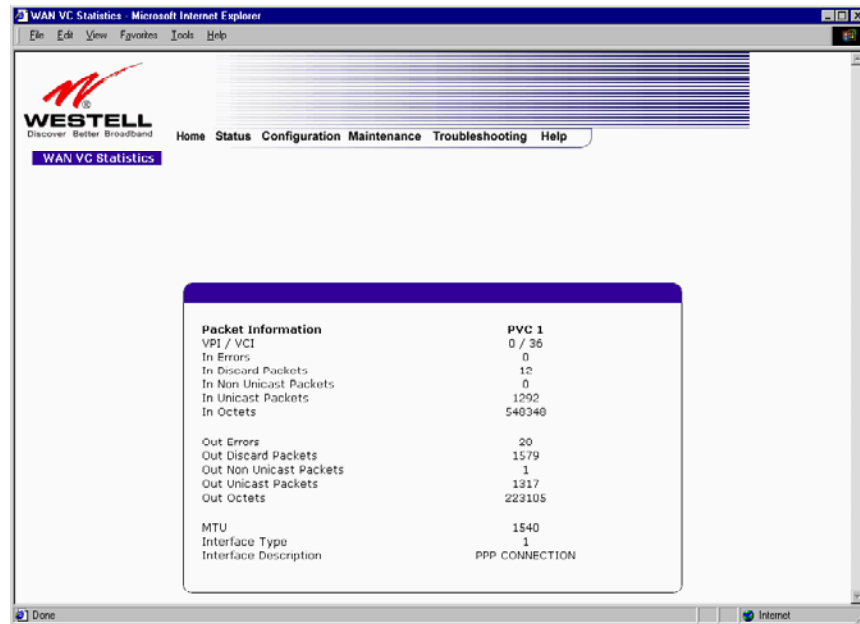


The following screen shows that the log file has been saved to your computer's desktop.



WAN VC Statistics

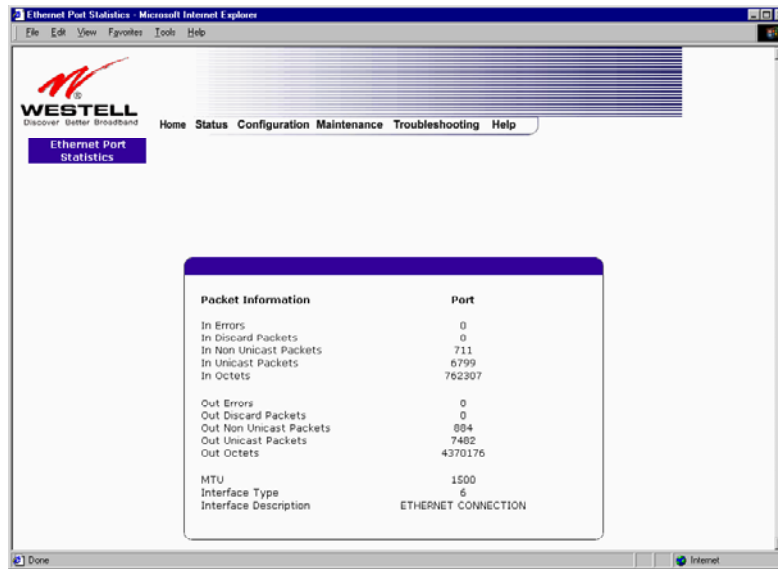
The following settings will be displayed if you select **WAN VC Stats** from the **Troubleshooting** menu.



| | |
|-------------------------|---|
| VPI/VCI | Displays the VPI/VCI values obtained from your Internet Service Provider. |
| In Errors | The number of error packets received on the ATM port. |
| In Discard Packets | The number of discarded packets received. |
| In Non Unicast Packets | The number of non-Unicast packets received on the ATM port. |
| In Unicast Packets | The number of Unicast packets received on the ATM port. |
| In Octets | The number of bytes received on the ATM port. |
| Out Errors | The number of outbound packets that could not be transmitted due to errors. |
| Out Discard Packets | The number of outbound packets discarded. |
| Out Non Unicast Packets | The number of non-Unicast packets transmitted on the ATM port. |
| Out Unicast Packets | The number of Unicast packets transmitted on the ATM port. |
| Out Octets | The number of bytes transmitted on the ATM port. |
| MTU | Maximum Transmission Unit -The number of data bytes contained in the ATM frame. |
| Interface Type | A unique identifier that represents the interface type. |
| Interface Description | A description field that refers to the interface type. |

Ethernet Port Statistics

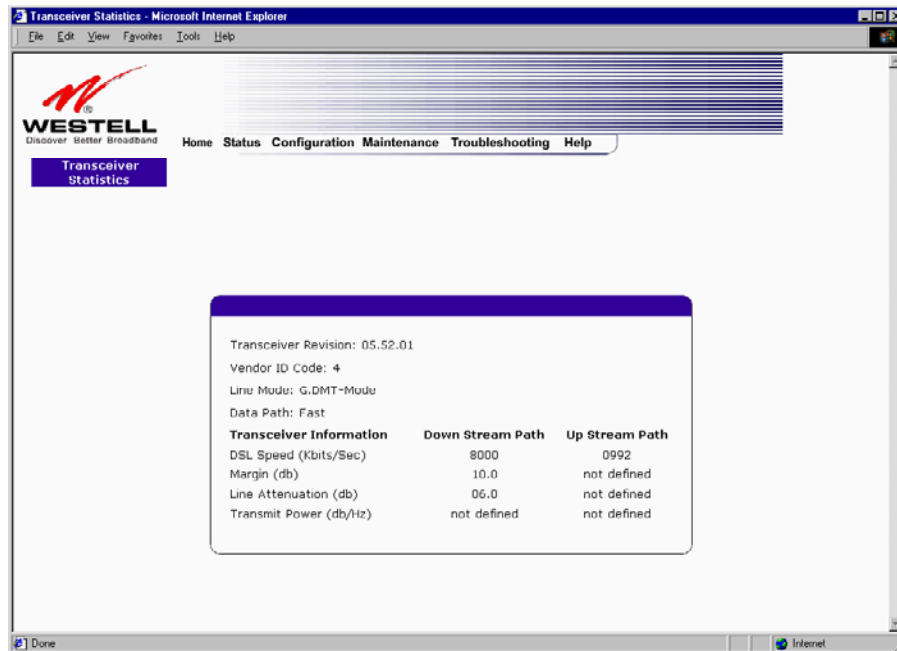
The following settings will be displayed if you select **Ethernet Port Stats** from the **Troubleshooting** menu.



| | |
|-------------------------|--|
| In Errors | The number of error packets received on the Ethernet interface. |
| In Discard Packets | The number of discarded packets received. |
| In Non Unicast Packets | The number of non-Unicast packets received on the Ethernet interface. |
| In Unicast Packets | The number of Unicast packets received on the Ethernet interface. |
| In Octets | The number of bytes received on the Ethernet interface. |
| Out Errors | The number of outbound packets that could not be transmitted due to errors. |
| Out Discard Packets | The number of outbound packets discarded. |
| Out Non Unicast Packets | The number of non-Unicast packets transmitted on the Ethernet interface. |
| Out Unicast Packets | The number of Unicast packets transmitted on the Ethernet interface. |
| Out Octets | The number of bytes transmitted on the Ethernet interface. |
| MTU | Maximum Transmission Unit- The number of data bytes contained in the Ethernet frame. |
| Interface Type | A unique identifier that represents the interface type. |
| Interface Description | A description field that refers to the interface type. |

Transceiver Statistics

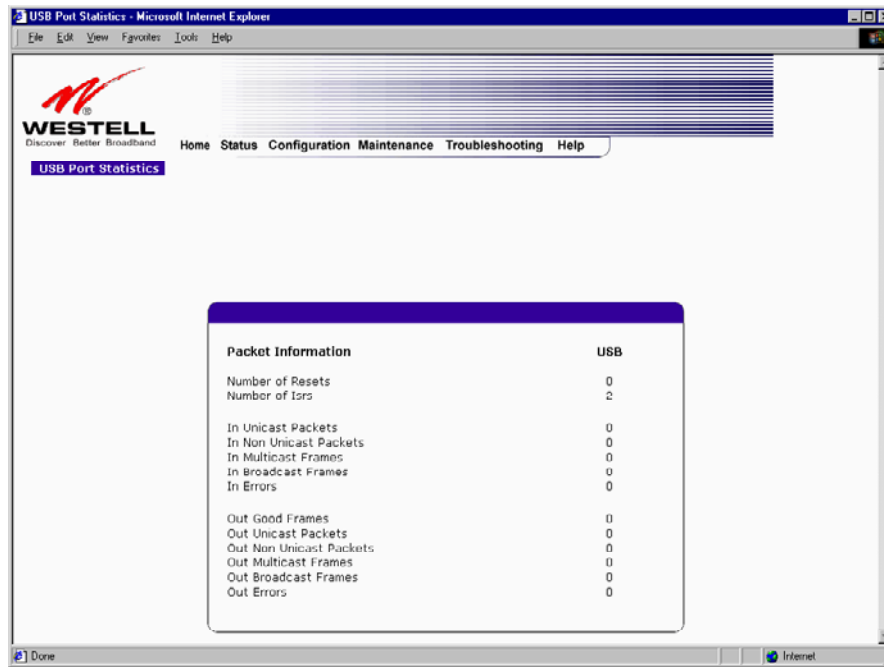
The following settings will be displayed if you select **Transceiver Stats** from the **Troubleshooting** menu.



| | |
|---|--|
| Transceiver Revision | The transceiver software version number. |
| Vendor ID Code | The CPE Vendor's ID code for their chipset. |
| Line Mode | The operational mode. Modes supported are No Mode, Multi Mode, T.1413 Mode, G.DMT Mode, and G.LITE Mode. |
| Data Path | The data path used (either Fast or Interleaved). |
| Transceiver Information-Down Stream/Up Stream Path | |
| DSL Speed (Kbits/Sec) | The transmission rate that is provided by your Internet Service Provider (ISP). |
| SNR Margin (db) | The Signal-to-Noise Ratio (S/N) where 0 db = 1×10^{-7} , which inhibits your DSL speed. |
| Line Attenuation (dB) | The DSL line loss. |
| Transmit Power (db/Hz) | The transmitted signal strength. |

USB Port Statistics

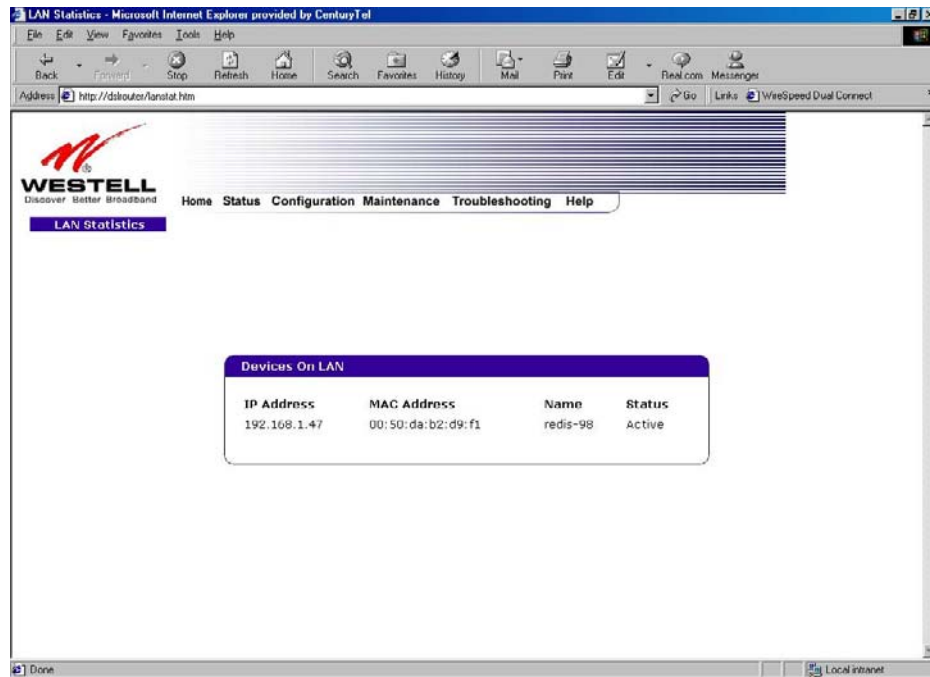
The following settings will be displayed if you select **USB Port Stats** from the **Troubleshooting** menu.



| | |
|-------------------------|---|
| Number of Resets | The number of times the Host PC reset the USB interface. |
| Number of Isrs | The number of times the Host PC requested communication with the Router. |
| In Unicast Packets | The number of packets received that did not have a Multicast or Broadcast class destination IP address. |
| In Non Unicast Packets | The number of packets received that had a Multicast or Broadcast class destination IP address. |
| In Multicast Frames | The number of frames received that had a Multicast class destination IP address. |
| In Broadcast Frames | The number of frames received that had a Broadcast class destination IP address. |
| In Errors | The number of packets received with an invalid format |
| Out Good Frames | The number of frames sent to the Host PC. |
| Out Unicast Packets | The number of packets sent that did not have a Multicast or Broadcast class destination IP address |
| Out Non Unicast Packets | The number of packets sent that had a Multicast or Broadcast class destination IP address. |
| Out Multicast Frames | The number of frames sent that had a Multicast class destination IP address. |
| Out Broadcast Frames | The number of frames sent that had a Broadcast class destination IP address. |
| Out Errors | The number of packets received by the Router but not sent to PC due to an error condition. |

LAN Statistics

The following settings will be displayed if you select **LAN Stats** from the **Troubleshooting** menu.



| | |
|--------------------|---|
| Device IP Address | Displays the IP address of the devices on the LAN. |
| DHCP NetMask | Displays the Subnet Mask, which determines what portion of an IP address that is controlled by the network and what portion is controlled by the host. |
| DHCP Start Address | Displays the first IP address that the DHCP server will provide. |
| DHCP End Address | Displays the last IP address that the DHCP server will provide. |
| DHCP Server Status | Displays the status, "ON" or "OFF" of the DHCP Server. |
| DHCP Server | <p>This setting allows the ADSL router to automatically assign IP addresses to local devices connected to the LAN. Westell advises setting this to enabled for the private LAN.</p> <p>OFF=DHCP Server is disabled</p> <p>Private LAN=DHCP addresses will be saved into the Private LAN configuration.</p> <p>Public LAN=DHCP addresses will be saved into the Public LAN configuration.</p> <p>This option is only available if the Public LAN DHCP server is enabled.</p> <p>NOTE: These addresses will be overwritten if the Internet service provider supports dynamic setting of these values.</p> |
| Devices on LAN | |
| IP Address | Displays the IP network address that your Router is on. |
| MAC Address | Media Access Controller (MAC) address of this device. |
| Name | Displays the ASCII (text) name of the devices connected to the LAN. |
| Status | Displays the status of the devices connected to the LAN. |

9.7 Help

If you select **Help** from the menu bar, a message from the help screens will be displayed. The type of message displayed depends on the menu that you are viewing. If you are viewing a pop-up screen, click the **help** link in the pop-up screen to obtain help messages.

A

About

This screen provides information about the Router. The following settings are displayed.

| About | |
|------------------|---|
| Model Number | Router manufacturer's model number. |
| Serial Number | Router manufacturer's serial number. |
| MAC Address | Ethernet MAC (i.e., hardware) Address of the Router. |
| Software Version | Router application software version number. |
| Software Model | Router application type. |
| Description | Description of the Router protocol processing application software. |
| Boot Loader | Router boot loader version number. |

Advanced Home Page

The advanced home page offers the same functionality as the home page but adds the ability to change the connection profile settings defined in the Router.

| About | |
|----------------|--|
| Edit | An "Edit" link is added for each connection profile. Selecting this link will pop-up a window that allows the connection profile settings to be changed. |
| New Connection | The "New Connection" link will pop-up a window to allow the creation of a new connection profile. |

ATM Loopback

| ATM Loopback | |
|--------------|--|
| ATM Loopback | This setting enables 0/21 loopback. Westell recommends that you <u>do not</u> change this setting. |

B

Backup/Restore

This option allows the Router configuration to be backed up to or restored from a secure location in flash. The following options are displayed.

| Backup/Restore | |
|-------------------------|--|
| Current becomes Back-up | Selecting this command button will backup the current active configuration to the secure flash location. |
| Back-up becomes Current | This command button will restore the previously stored configuration from the flash location. |
| Factory becomes Current | This option will restore the Router to the state that it arrived in from the factory. |

C

Change Administration Password

The Router has an administrators password. This password protects the Router from any unauthorized modifications to the configuration setting in the Router. The following settings are displayed.

| Change Administration Password | |
|--------------------------------------|---|
| Enter Administration Name | This field specifies the Administrator's name. Only one administrator can be defined. |
| Enter/Verify Administration Password | This field specifies the password required to enable administrator access. The password must be entered twice to ensure that the password has been entered correctly. |

Connection Summary

| Connection Summary | |
|--------------------|---|
| Connection Summary | The connection profile screen displays summary information about the Router. The connection state is shown along with the amount of traffic has passed through the Router. Each connection profile is listed with its associated usage information. |

D

Diagnostics Help

This screen provides tools for diagnosing PPP connection problems. Some tests depend on the Router status and the capabilities exercised by previous tests, which may prevent other types of testing.

Beginning of Diagnostics Help screens

DSL

The Router status checks the Router connection. The following is a list of the possible responses:

| DSL | |
|------------|---|
| Up | The Router is operating correctly and has obtained synchronization with the opposing modem. |
| Down | Explanation: The Router is operating correctly, but has not synchronized with the opposing DSLAM. Solution: First, check to be sure that the cable connecting your Router to the ADSL wall jack is properly connected at both ends. If the cable is properly connected and the Router does not synchronize, try another phone cable. Next, wait for the Router to train. It can sometimes take as long as two minutes for the Router to train. If it still has not come into synchronization, power cycle the Router. If you have tried the approach above and the Router still does not synchronize, contact your service provider. |

PPPoE

The PPPoE status indicates if a PPPoE session is established (i.e., if the PPPoE Discovery procedure has completed). The following is a list of the possible responses:

| PPPoE | |
|--------------------|---|
| Session up | A valid PPPoE session has been detected. |
| no session | Currently there is no active PPPoE session. A PPP session must be connected from the homepage screen. |
| initiating session | The connection process for a PPPoE session has been initialized. It can sometimes take a few seconds for the PPPoE Discovery procedure to complete. Wait 10-15 seconds and try again. If the PPPoE Discovery still cannot complete, there may be a configuration issue with your service provider's equipment. Verify your VPI/VCI settings (on the LAN Advanced page) and contact your ISP provider. |
| Session halted | A successful PPPoE session was halted. A PPP session must be connected from the homepage screen. |
| passed | A valid PPPoE session was established. |
| Session failure | A PPPoE session could not be made. There may be a configuration issue with your service provider's equipment. Verify your VPI/VCI settings (on the LAN Advanced page) and contact your provider. |

PPP

This field displays the PPP Connection status. A PPPoE or PPPoA session must already be established. The following is a list of the possible responses:

| PPP | |
|------------------------------|--|
| Connection up | The Router has established a PPP connection. |
| no connection | There is no PPP connection. A PPP session must be connected from the homepage screen. |
| initiating connection | The PPP connection process has been initialized. |
| Connection halted | A successful PPP connection was halted. Solution: A PPP session must be connected from the homepage screen. |
| Cannot connect | Explanation: A PPP connection could not be made because of a PPPoE session failure. |
| Authorization failure | The username or password is incorrect. Verify that the username and password your Service Provider issued are entered correctly. |
| Link control protocol failed | Try re-establishing the session (from the home page). If this doesn't help, there may be a configuration issue or other failure with your provider's equipment. Contact your service provider. |

Self Test

The Self Test performs an integrity check of certain internal components of the Router. The following is a list of the possible responses:

| Self Test | |
|----------------|--|
| Success | The Router is operating correctly. |
| Flash Corrupt | Explanation: The self-test process has detected a problem with internal flash memory. Solution: Restart the Router. If the error persists, contact your service provider. |

PING ISPs' Router

The IP remote router test performs an IP network check (i.e., an IP Ping) of the Service Provider's Router. This test verifies that the Router can exchange IP traffic with an entity on the other side of the DSL line. The following is a list of the possible responses:

| PING ISP's Router | |
|-------------------|--|
| Success | The Router has detected an IP remote router connection. |
| No Response | Explanation: This message will occur when an IP remote Router does not answer the IP Ping. Solution: This test fails when the provider's Router does not give its IP address to the Router during session establishment. Try Pinging another host, using the Ping test near the bottom of the Diagnostic screen. If you are able to Ping any host, or even if you are able to find an IP address for a given host name (try "www.yahoo.com"), then the failure of the "IP Remote Router" test is moot, because the success of the Ping demonstrates that you are getting IP traffic across the DSL line. If the separate Ping fails as well, contact your service provider. |
| could not test | Explanation: Test could not be executed because of Router status. |

DNS

The DNS test issues a request to try to resolve the name of a particular host. The host name is entered in the input box. The following is a list of the possible responses:

| DNS | |
|--------------------------|--|
| Success | The Router has successfully obtained the resolved address. The IP address is shown below the host name input box |
| No Response | Explanation: The Router has failed to successfully obtain the resolved address. Solution: Determine the IP addresses of your DNS servers (from the home page, click "Edit" and then "Advanced"), and then use the Ping test near the bottom of the Diagnostic screen to try to Ping those addresses. This may provide useful information when you contact your service provider and speak with Technical Support. |
| Host not found | Explanation: The DNS Server was unable to find an address for the given host name. Solution: That host may no longer be available on the Internet. Try entering a different host name. |
| No data, enter host name | Explanation: There must be a host name entered in the input box. |
| could not test | Explanation: Test could not be executed because of Router status. |

PING

Select **PING** to check IP continuity to a remote computer either within or beyond the Service Providers network.

Enter either the IP address or the hostname of the remote host computer into the input box to the right of the Test button. If you Ping by name, DNS will be used to look up the appropriate IP address for that name.

The following is a list of the possible responses:

| PING | |
|----------------------------|---|
| Success | The Remote Host Computer was detected. |
| No Response | Explanation: This message will occur when there was no response to the Ping from the remote computer. Solution: Bear in mind that many hosts on the Internet are configured for security reasons to not respond to IP Ping messages. If you get a success from the DNS test using the same host name, chances are good that your connection is fine, whether you can Ping the named host or not. |
| No name or address to PING | Explanation: There must be a host name or IP address entered in the input box in order for the Router to Ping. |
| could not test | Explanation: Test could not be executed because of Router status. |

End of Diagnostic Help Screens

DHCP Configuration

This screen contains the settings which control how the ADSL router interacts with the local devices connected to the router. Westell does not recommend that you change these settings. The following settings are displayed.

| DHCP | |
|---|--|
| DHCP Server | Dynamic Host Configuration Protocol (DHCP) is an Internet standard that allows the ADSL router to automatically assign IP addresses to devices connected on the LAN network. It is advised that this is enabled for Private LAN. |
| DHCP Start Address (If DHCP is enabled) | This setting specifies the start of the IP address pool that the modem uses to assign IP addresses to local devices. |
| DHCP End Address (If DHCP is enabled) | This setting specifies the end address of the IP address pool used for automatic configuration of local devices. |
| DHCP Lease (If DHCP is enabled) | This setting specifies the DHCP lease time. |

DNS Configuration

The Router has a built-in DNS server. The Router has a feature called "Dynamic DNS." When an IP address is assigned, the Router will interrogate the new device for a machine name using several well-known networking protocols. Any names learned will dynamically be added to the DNS server's table of local hosts. A static host assignment is needed only if the new device does not support any of the well-known protocols. The following settings are displayed.

| DNS Configuration Screen | |
|--------------------------|--|
| Domain Name | The name of your network. This uses the internet standard for delineating domain names. |
| Static Host Assignment | This table allows the creation and maintenance of manually configured DNS entries. |
| Dynamic Host Assignment | This table shows the current list of devices that have automatically provided information. |

E

Edit Connection Profiles

This screen facilitates the changing of connection profile parameters. The following settings are displayed.

| Edit Connection Profiles | |
|--------------------------|---|
| Connection Name | This field is a description of the default connection profile that the Router will use. Feel free to use whatever description you desire. |
| Account ID | Your account ID is supplied by your ISP. This text string uniquely identifies you with your ISP. |
| Account Password | The Account Password is a key phrase or text string that verifies your identity to the ISP. |
| Service Profile | The Router stores several service profiles. A service profile is a collection of settings for the built-in firewall and NAT. These settings control which applications are enabled to talk through the Router. This selection specifies which service profile is used when the Router is using this connection. |
| Manual/Auto/Always ON | These radio buttons specify how this connection profile is used. A manual |

| | |
|---|---|
| | setting requires that this connection must be manually established through the “homepage” connection button. When this is set to auto, the Router will monitor the network traffic and determine when a connection needs to be made. The connection process will happen automatically the “Always ON” selection causes the Router to aggressively establish a connection with your ISP. Whenever the Router detects that the connection to your ISP is down, it will try to re-establish that connection. |
| Time Out Enable/Connection Time Out | Selecting this option will enable the disconnect timeout. If this option is enabled the Router will monitor the ISP connection for activity. If there is no activity for the timeout period, the Router will disconnect from the ISP. |
| Edit VC Connection | This screen is an advanced screen. Modifying parameters identified on this screen can cause severe disruption of your service. VC stands for “Virtual Connection.” A VC identifies a connection through the service provider’s ATM network to your ISP. It is not recommended that you change anything on these pages unless explicitly instructed by your service provider. |

F

Firewall Settings

This screen is an advanced configuration screen. It allows you to set the level of security you wish to have on your local network. All security levels except “None” protect against known Internet attacks and devices that attempt to gain remote access to your Router. The following settings are displayed.

| Firewall Settings | |
|-------------------|--|
| High | This security level only allows basic Internet functionality. Only Mail, News, Web, FTP, and IPSEC are allowed. No other traffic is allowed. Another restriction of high security is that it can’t be modified by NAT configuration options. With High security, you are guaranteed to only pass the previously mentioned traffic. |
| Medium | This security level only allows basic Internet functionality by default. Like High security, Medium security, allows customization through NAT configuration, so you can enable the traffic that you want to pass. |
| Low | The low security setting will allow all traffic except for known attacks. With low security, your Router is visible by other computers on the Internet. |
| Custom | Custom is a very advanced configuration option that allows you to edit the firewall configuration directly. Only the most expert users should try this. |

H

Home Page

The home page gives you a quick summary of the Router’s state. The following settings are displayed.

| Home Page | |
|---------------------|---|
| Connection Overview | The Connection Overview section displays the status of the DSL connection. The DSL must show a state of “UP” in order for the Router to communicate with your service provider’s network. |
| Connection Name | The Connection Name section displays all of the connection profiles that are |

| | |
|----------------|--|
| | defined by the Router. A connection profile is information that the Router needs to establish a connection to your ISP. The “PPP Status” columns will show a status of “UP” if the Router is currently using that profile to communicate. The command button allows you to control the connection state. |
| Profile Editor | Selecting the “Profile Editor” link will allow you to define or change any of the connection profile settings. |

L

LAN Configuration

This screen contains the setting that controls how the Router interacts with the local devices connected to the Router. Westell does not recommend that you change these settings. The following settings are displayed.

| LAN Configuration | |
|--------------------|--|
| Router IP Address | This controls the IP address that the Router uses for local communication. |
| Subnet Mask | This setting specifies the subnet mask to use to determine if an IP address belongs to your local network. |
| DHCP Start Address | This setting specifies the start of the IP address pool that the Router uses to assign IP addresses to local devices. |
| DHCP End Address | This setting specifies the end address of the IP address pool used for automatic configuration of local devices. |
| DNS Server Enable | DNS stands for Domain Name System. This is an Internet standard that facilitates communication among devices. This allows a name to be used when specifying a device instead of an IP address. Normally you want this enabled. |
| DHCP Server Enable | DHCP stands for Dynamic Host Configuration Protocol. This is an Internet standard that allows the Router to automatically assign IP addresses to devices connected on the LAN network. It is advised that this option is set to Enabled. |

LAN Statistics

This page contains information regarding the configuration and status of your Local LAN. The following settings are displayed.

| LAN Configuration | |
|--------------------|---|
| Device IP Address | This displays the IP address that the ADSL router uses for local communication. |
| DHCP NetMask | This displays the subnet address that the ADSL router’s DHCP server issues in DHCP responses. |
| DHCP Start Address | This setting specifies the start of the IP address pool that the modem uses to assign IP addresses to local devices. |
| DHCP End Address | This setting specifies the end address of the IP address pool used for automatic configuration of local devices. |
| DHCP Server Status | Displays the status, “ON” or “OFF” of the DHCP Server |
| DHCP Server | Displays which network “Public” or “Private” the DHCP server is serving IP addresses for. |
| Devices on LAN | This page displays the current devices the modem has found on your LAN. The name of the device, the Ethernet MAC address, and the status, “Active” or “Inactive” is displayed in the table. |

P

Private LAN

This page contains the settings that control how the ADSL router interacts with the local devices connected to the router. It is not recommended that these settings be changed. The following settings are displayed.

| Private LAN | |
|---|--|
| Private LAN DHCP Server Enable | Dynamic Host Configuration Protocol (DHCP) is an Internet standard that allows the ADSL router to automatically assign IP addresses to devices connected on the LAN network. It is advised that this is enabled for Private LAN. |
| Private LAN Enable | This setting enables the Private NAT'ed interface. It is advised to leave this enabled. |
| Modem IP Address | This controls the IP address that the ADSL router uses for local communication. |
| Subnet Mask | This setting specifies the subnet mask to use to determine if an IP address belongs to your local network. |
| DHCP Start Address (If DHCP is enabled for Private LAN) | This setting specifies the start of the IP address pool that the modem uses to assign IP addresses to local devices. |
| DHCP End Address (If DHCP is enabled for Private LAN) | This setting specifies the end address of the IP address pool used for automatic configuration of local devices. |
| DHCP Lease (If DHCP is enabled for Private LAN) | This setting specifies the DHCP lease time. |

Protocol

| Protocol | |
|----------|---|
| Protocol | This screen informs the Router which networking protocol to use when communicating with your ISP. Your ISP provides this information. |

Public LAN

This screen contains the settings that control how the ADSL router interacts with the local devices connected to the router. It is not recommended that these settings be changed. The following settings are displayed.

| Public LAN | |
|-------------------------------|--|
| Public LAN DHCP Server Enable | Dynamic Host Configuration Protocol (DHCP) is an Internet standard that allows the ADSL router to automatically assign IP addresses to devices connected on the LAN network. It is advised that this is enabled for Private LAN. |
| Public LAN Enable | This setting enables the Public interface. This feature allows a global subnet to exist behind your modem. |
| Modem IP Address | This controls the IP address that the ADSL router uses for local communication. |
| Subnet Mask | This setting specifies the subnet mask to use to determine if an IP address belongs to your local network. |

| | |
|--|--|
| DHCP Start Address (If DHCP is enabled for Public LAN) | This setting specifies the start of the IP address pool that the modem uses to assign IP addresses to local devices. |
| DHCP End Address (If DHCP is enabled for Public LAN) | This setting specifies the end address of the IP address pool used for automatic configuration of local devices. |
| DHCP Lease (If DHCP is enabled for Public LAN) | This setting specifies the DHCP lease time. |

S

Software Upgrade

| Software Upgrade | |
|------------------|---|
| Software Upgrade | This screen is used to upgrade the Router's application image. The application image is specified by entering in the filename or by use of the browse button. |

Single Static IP

This page contains the settings that would allow the PPP address received from the network to be propagated to a single LAN device behind the modem.

| Single Static IP | |
|------------------|---|
| WAN IP Address | This is the PPP IP address the ISP has assigned the modem. |
| Selection box | <p>This box contains the devices available to share the Single Static IP address the ISP has assigned the modem. The names listed in the select box will be populated by the modem's DHCP server based on DHCP requests. If a device's name cannot be determined, the current IP address of the device will be placed in the list.</p> <p>When the feature is enabled, the active machine will be highlighted in the select box and be displayed at the bottom of the page with the "disable" button.</p> <p>When the feature is disabled, no device in the select box will be highlighted and the "enable" button will be available.</p> <p>When the "User Configured PC" is selected, a local PC must be configured manually with the WAN IP address as its Ethernet adapter's address.</p> |

U

User Name

This screen asks for information that will allow the Router to make a connection to the ISP on your behalf. The Router will need to know your Account ID and Account Password. This information is stored in the Router.

| User Name | |
|------------------|---|
| Connection Name | This is a description of the default connection profile, which the Router will use. Feel free to use whatever description you desire. |
| Account ID | Your Account Id is supplied by your ISP and is a text string that uniquely identifies you with your ISP. |
| Account Password | The Account Password is a key phrase or text string that verifies your identify to the ISP. |

V

VC Configuration

| VC Configuration Screen | |
|-------------------------|---|
| VC Configuration | This screen is an advanced screen. Modifying parameters on this screen can cause severe disruption of your service. VC stands for "Virtual Connection." A VC identifies a connection through the service provider's ATM network to your ISP. It is not recommended that anything be changed on these pages unless explicitly instructed by your service provider. |

VPI/VCI

| VPI/VCI | |
|---------|---|
| VPI/VCI | This screen asks for information that the Router needs to establish a communication channel to your ISP. The VPI and VCI values are supplied by your ISP. |

9.8 NAT Services

For your convenience, the Westell Router supports protocols for Applications, Games, and VPN-specific programs. Table 6 provides protocol information for the services that are supported by your Router.

NOTE: To configure your Router for a service or application, follow the steps from the Advanced Service Configuration section. See section 9.4 of this User Guide.

Table 6. Applications/Games/VPN Support

| Application/Game | Port/Protocol |
|-----------------------------------|--|
| Aliens vs. Predator | 80 UDP, 2300 UDP, 8000-8999 UDP |
| Americas Army | TCP - 20045 UDP - 1716 to 1718, 8777, 27900 |
| America Online | 5190 TCP/UDP |
| Anarchy Online | TCP/UDP – 7012,7013, 7500 -7505 |
| AOL Instant Messenger | 4099 TCP, 5190 TCP |
| Asheron's Call | 9000-9013 UDP, 28800-29000 TCP |
| Battlecom | 2300-2400 TCP/UDP, 47624 TCP/UDP |
| Battlefield 1942 | UDP - 14567, 22000, 23000 to 23009, 27900, 28900 |
| Black and White | 2611-2612 TCP, 6667 TCP, 6500 UDP, 27900 UDP |
| Blizzard Battle.net (Diablo II) | 4000 TCP, 6112 TCP/UDP |
| Buddy Phone | 700, 701 UDP |
| Bungie.net, Myth, Myth II Server | 3453 TCP |
| Calista IP Phone | 3000 UDP, 5190 TCP |
| Citrix Metaframe | 1494 TCP |
| Client POP/IMAP | 110 TCP |
| Client SMTP | 25 TCP |
| Counter Strike | 27015 TCP/UDP, 27016 TCP/UDP |
| Dark Reign 2 | 26214 TCP/UDP |
| Delta Force (Client and Server) | 3568 UDP, 3100-3999 TCP/UDP |
| Delta Force 2 | 3568-3569 UDP |
| DeltaForce: Land Warrior | UDP 53 TCP 21 TCP 7430 TCP 80 UDP 1029 UDP 1144 UDP 65436 UDP 17478 |
| DNS | 53 UDP |
| Elite Force | 2600 UDP, 27500 UDP, 27910 UDP, 27960 UDP |
| Everquest | 1024-7000 TCP/UDP |
| F-16, Mig 29 | 3863 UDP |
| F-22 Lightning 3 | 4660-4670 TCP/UDP, 3875 UDP, 4533-4534 UDP, 4660-4670 UDP |
| F-22 Raptor | 3874-3875 UDP |

| Application/Game | Port/Protocol |
|--|--|
| Fighter Ace II | 50000-50100 TCP/UDP |
| Fighter Ace II for DX play | 50000-50100 TCP/UDP, 47624 TCP, 2300-2400 TCP/UDP |
| FTP | 20 TCP, 21 TCP |
| GameSpy Online | UDP 3783 UDP 6515 TCP 6667 UDP 12203 TCP/UDP 13139 UDP 27900 UDP 28900 UDP 29900 UDP 29901 |
| Ghost Recon | TCP 80 UDP 1038 UDP 1032 UDP 53 UDP 2347 UDP 2346 |
| GNUTella | 6346 TCP/UDP, 1214 TCP |
| Half Life Server | 27005 UDP(client only) 27015 UDP |
| Heretic II Server | 28910 TCP |
| Hexen II | 26900 (+1) each player needs their own port. Increment by one for each person |
| Hotline Server | 5500, 5503 TCP 5499 UDP |
| HTTPS | 443 TCP/UDP |
| ICMP Echo | 4 ICMP |
| ICQ OLD | 4000 UDP, 20000-20019 TCP |
| ICQ 2001b | 4099 TCP, 5190 TCP |
| ICUII Client | 2000-2038 TCP, 2050-2051 TCP, 2069 TCP, 2085 TCP, 3010-3030 TCP |
| ICUII Client Version 4.xx | 1024-5000 TCP, 2050-2051 TCP, 2069 TCP, 2085 TCP, 3010-3030 TCP, 2000-2038 TCP 6700-6702 TCP, 6880 TCP, 1200-16090 TCP |
| IMAP | 119 TCP/UDP |
| IMAP v.3 | 220 TCP/UDP |
| Internet Phone | 22555 UDP |
| IPSEC ESP | PROTOCOL 50 |
| IPSEC IKE | 500 UDP |
| Ivisit | 9943 UDP, 56768 UDP |
| JKII:JO (Jedi Knight II: Jedi Outcast) | UDP - 28070 (default) UDP- 27000 to 29000 |
| KALI, Doom & Doom II | 2213 UDP, 6666 UDP (EACH PC USING KALI MUST USE A DIFFERENT PORT NUMBER STARTING WITH 2213 + 1) |
| KaZaA | 1214 TCP/UDP |
| Limewire | 6346 TCP/UDP, 1214 TCP |
| Medal Of Honor: Allied Assault | TCP 80 UDP 53 |

| Application/Game | Port/Protocol |
|-------------------------------|--|
| | UDP 2093 UDP 12201 TCP 12300 UDP 2135 UDP 2139 TCP/UDP 28900 |
| mIRC Chat | 6660-6669 TCP |
| Motorhead Server | 16000 TCP/UDP, 16010-16030 TCP/UDP |
| MSN Game Zone | 6667 TCP, 28800-29000 TCP |
| MSN Game Zone (DX 7 & 8 play) | 6667 TCP, 6073 TCP, 28800-29000 TCP, 47624 TCP, 2300-2400 TCP/UDP |
| MSN Messenger | 6891-6900 TCP, 1863 TCP/UDP, 5190 UDP, 6901 TCP/UDP |
| Napster | 6699 TCP |
| Need for Speed 3, Hot Pursuit | 1030 TCP |
| Need for Speed, Porsche | 9442 UDP |
| Net2Phone | 6801 UDP |
| NNTP | 119 TCP/UDP |
| Operation FlashPoint | 47624 UDP, 6073 UDP, 2300-2400 TCP/UDP, 2234 TCP |
| Outlaws | 5310 TCP/UDP |
| Pal Talk | 2090-2091 TCP/UDP, 2095 TCP, 5001 TCP, 8200-8700 TCP/UDP, 1025-2500 UDP |
| pcAnywhere host | 5631 TCP, 5632 UDP, 22 UDP |
| Phone Free | 1034-1035 TCP/UDP, 9900-9901 UDP, 2644 TCP, 8000 TCP |
| Quake 2 | 27910 UDP |
| Quake 3 | 27660 UDP Each computer playing QuakeIII must use a different port number, starting at 27660 and incrementing by 1. You'll also need to do the following: 1. Right click on the QIII icon 2. Choose "Properties" 3. In the Target field you'll see a line like "C:\Program Files\Quake III Arena\quake3.exe" 4. Add the Quake III net_port command to specify a unique communication port for each system. The complete field should look like this: "C:\Program Files\Quake III Arena\quake3.exe" +set net_port 27660 5. Click OK. 6. Repeat for each system behind the NAT, adding one to the net_port selected (27660,27661,27662) |
| Quicktime 4/Real Audio | 6970-32000 UDP, 554 TCP/UDP |
| Rainbow Six & Rogue Spear | 2346 TCP |
| RealOne Player | TCP - 554, 7070 to 7071 UDP - 6970 to 7170 |
| Real Audio | 6970-7170 UDP |
| Return To Castle Wolfenstein | Default -27960 TCP/UDP UDP - 27950 to 27980 |
| Roger Wilco | TCP/UDP 3782 UDP 3783 (BaseStation) |
| ShoutCast Server | 8000-8005 TCP |
| Spinner Radio/Netscape Music | TCP - 554 |
| SSH Secure Shell | 22 TCP/UDP |

| Application/Game | Port/Protocol |
|--|--|
| Starcraft | 2346 TCP |
| Starfleet Command | 2300-2400 TCP/UDP, 47624 TCP/UDP |
| SOF/SOFII (Soldier of Fortune / Soldier of Fortune II) | UDP - 28910 to 28915 |
| Telnet | 23 TCP |
| Tiberian Sun & Dune 2000 | 1140-1234, 4000 TCP/UDP |
| Tribes2 | TCP - 15104, 15204, 15206, 6660 to 6699 UDP - 27999 to 28002 |
| Ultima Online | 5001-5010 TCP, 7775-7777 TCP, 8800-8900 TCP, 9999 UDP, 7875 UDP |
| Unreal Tournament server | 7777 (default gameplay port) 7778 (server query port) 7779,7779+ are allocated dynamically for each helper UdpLink objects, including UdpServerUplink objects. Try starting with 7779-7781 and add ports if needed 27900 server query, if master server uplink is enabled. Home master servers use other ports like 27500 Port 8080 is for UT Server Admin. In the [UWeb.WebServer] section of the server.ini file, set the ListenPort to 8080 and ServerName to the IP assigned to the router from your ISP. |
| USENET News Service | 143 TCP |
| VNC, Virtual Network Computing | 5500 TCP, 5800 TCP, 5900 TCP |
| Westwood Online, C&C | 4000 TCP/UDP, 1140-1234 TCP/UDP |
| World Wide Web (HTTP) | 80 TCP 443 TCP (SSL) 8008 OR 8080 TCP (PROXY) |
| Yahoo Messenger Chat | 5000-5001 TCP |
| Yahoo Messenger Phone | 5055 UDP |
| VPN Protocol | Comments |
| IPSec Encryption | IPSec using AH can not be supported through NAT. IPSec using ESP and L2TP can be supported via an ALG |
| L2TP | IPSec using ESP and L2TP can be supported via an ALG. |
| PPTP | Works through NAT. |

10. TECHNICAL SUPPORT INFORMATION

Westell Technical Support

If technical assistance is required, contact Westell by using one of the following options:

Phone: 1-630-375-4500
email: global_support@westell.com

Visit Westell at www.westell.com to obtain additional information, view frequently asked questions, and enter on-line service requests.

11. WARRANTY AND REPAIRS

Warranty

Westell warrants this product free from defects at the time of shipment. Westell also warrants this product fully functional for the period specified by the terms of the warranty. Any attempt to repair or modify the equipment by anyone other than an authorized Westell representative will void the warranty.

Repairs

Westell will repair any defective Westell equipment without cost during the warranty period if the unit is defective for any reason other than abuse, improper use, or improper installation, or acts of nature. Before returning the defective equipment, request a **Return Material Authorization (RMA)** number from Westell. Once an RMA number is obtained, return the defective unit, freight prepaid, along with a brief description of the problem to:

Westell, Inc.
ATTN: R.G.M Department
750 N. Commons Drive
Aurora, IL 60504-7940

Westell will continue to repair faulty equipment beyond the warranty period for a nominal charge. Contact a Westell Technical Support Representative for details.

12. PRODUCT SPECIFICATIONS

Specifications for the Dual Connect Router are listed in this section.

ADSL

- DSL Line Code: Discrete Multi-Tone (DMT)
- DSL Rates: 32 kbps to 8 Mbps downstream and 32 kbps to 800 Kbps upstream
- Power spectral density: -40 dBm/Hz
- DSL Impedance: 100 Ohms
- DSL Performance: Performance: per G.992.1, ANSI T1.413.

Protocol Features

- Bridge Encapsulation per RFC2684 (Formerly RFC1483)
- Logical Link Control/Subnetwork Access Protocol (LLC/SNAP)
- Software Upgradeable
- PPPoE Support
- ATM SAR: Internal to Modem

System Requirements for USB

- Pentium Class PC or above
- Microsoft Windows 98, 2000, ME, or XP installed
- Operating system CD
- Internet Explorer 4.x or Netscape Navigator 4.x or higher
- 32 MB RAM
- 10 MB of free hard drive space
- USB Version 1.0 or 1.1 compliant bus

System Requirements for 10/100 Base-T/Ethernet

- Pentium Class PC or above
- Microsoft Windows 95, 98, 2000, ME, NT 4.0, or XP installed or
- Macintosh® OS 9.X or OS X installed
- Operating system CD
- Internet Explorer 4.x or Netscape Navigator 4.x or higher
- 32 MB RAM
- Ethernet 10/100 Base-T interface
- 10 MB of free hard drive space
- TCP/IP Protocol installed

Dimensions

- Weight Height: 1.6 in. (4.0 cm)
- Width: 7.3 in. (16.0 cm)
- Depth: 6.1 in. (12.8 cm)

Weight

- Approx. 2.0 lbs. (0.90 kg)

Environmental

- Ambient Operating Temperature: +32 to +104°F (0 to +40°C)
- Relative Humidity: 5 to 95%, non-condensing



Power Supply

- 120 VAC to 12 VAC wall-mount power supply

Power Consumption

- Less than 8 watts typical, from 120 VAC

Connectors

- DSL/LINE: 6-pin modular jack
- Power connector
- PC: USB Series B connector
- Ethernet: 8-pin RJ-45 modular jack

EMC Compliance

- FCC, Part 15 Class B

Safety

- Conforms to UL Standard 60950, 3rd Edition
- Certified to CAN/CSA Standard C22.2 No. 60950

Regulatory Approval

- UL
- CSA
- FCC, Part 68
- Industry Canada CS03

13. SOFTWARE LICENSE AGREEMENT

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8. Costs of Litigation. If any action is brought by either party to this License Agreement against the other party regarding the subject matter hereof, the prevailing party shall be entitled to recover, in addition to any other relief granted, reasonable attorney fees and expenses of litigation.

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10. No Waiver. The failure of either party to enforce any rights granted hereunder or to take action against the other party in the event of any breach hereunder shall not be deemed a waiver by that party as to subsequent enforcement of rights or subsequent actions in the event of future breaches.

14. PUBLICATION INFORMATION

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